Vol. 1016 Number 5

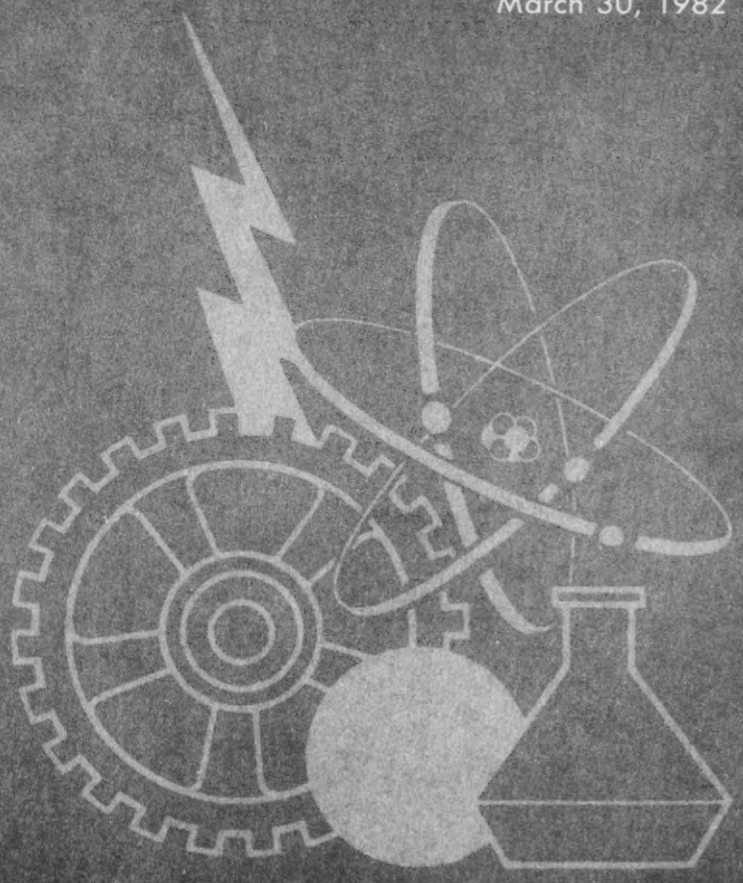
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

March 30, 1982



U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

March 30, 1982 Volume 1016 Number 5

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THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly, subscription $360.00 per annum for first-class mailing, also available as fourth-class mail at $250.00 domestic; $312.50 foreign; foreign first-class mailing rates will be furnished upon request; single copies each, $6.50 domestic, $8.15 foreign.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Jan. 19, 1982. *Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of February 1982

Affirmed	181
Affirmed in Part	21
Reversed	78
Total	280

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,745,623, Re. S.N. 320,089, Filed Nov. 10, 1981, Cl. 29/91.8, DIAMOND TOOLS FOR MACHINING, Robert H. Wentorf, Jr., et al., Owner of Record: *General Electric Co., Schenectady, N.Y.,* Attorney or Agent: Mark E. Phelps, et al., Ex. Gp.: 321

4,268,296, Re. S.N. 302,332, Filed Sept. 15, 1981, Cl. 065/090, METHOD AND APPARATUS FOR MANUFACTURE OF GLASS FILM, Lawrence V. Pfaender, Owner of Record: *Owens-Illinois, Inc., Toledo, Ohio,* Attorney or Agent: Charles S. Lynch, Ex. Gp.: 173

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

Re. 30,684, Reexam. No. 90/000,169, Requested: Mar. 1, 1982, Cl. 318/318, DIGITAL MASS FLOW CONTROL SYSTEM, Kenneth W. Bullivant, Owner of Record: *K-Tron Corp., Glassboro, N.J.,* Attorney or Agent: Arthur H. Seidel, Ex. Gp.: 210, Requester: Pennwalt Corp., Pittsburgh, Pa.

3,743,260, Reexam. No. 90/000,165, Requested: Feb. 22, 1982, Cl. 266/23, ANTI-POLLUTING WASTE COLLECTOR FOR A BURN TABLE, Mark M. Alleman, et al., Owner of Record: *Caterpillar Tractor Co., Peoria, Ill.,* Attorney or Agent: Paul S. Lempio, Ex. Gp.: 110, Requester: David C. Bruening, Pittsburgh, Pa.

4,111,204, Reexam. No. 90/000,168, Requested: Feb. 25, 1982, Cl. 128/276, SUCTION COLLECTION SYSTEM, Stephen Roy Hessel, Owner of Record: *C. R. Bard, Inc., Murray Hill, N.J.,* Attorney or Agent: Dennison, Meserole, Pollack & Scheiner, Ex. Gp.: 335, Requester: Becton, Dickinson & Co., Paramus, N.J.

4,162,149, Reexam. No. 90/000,172, Requested: Mar. 1, 1982, Cl. 55/315, GRAVEL AND DUST SEPARATOR AND CONTAINER FOR VACUUM CLEANING SYSTEMS, Clayton G. Mekelburg, Owner of Record: *Rent A Vac International, Ltd., Denver, Colo.,* Attorney or Agent: Richard D. Law, Ex. Gp.: 177, Requester: Omri M. Behr, Princeton, N.J.

4,186,535, Reexam. No. 90/000,166, Requested: Feb. 25, 1982, Cl. 52/250, SHEAR LOAD RESISTANT STRUCTURE, Virgil R. Morton, Owner of Record: *Verco Manufacturing, Inc., Phoenix, Ariz.,* Attorney or Agent: Cahill, Sutton & Thomas, Ex. Gp.: 354, Requester: ASC Pacific, Inc., West Sacramento, Calif.

4,213,282, Reexam. No. 90/000,170, Requested: Mar. 1, 1982, Cl. 52/404, METAL PANEL ROOFING STRUCTURE, Robert E. Heckelsberg, Owner of Record: *AMCA International Corp., Hanover, N.H.,* Attorney or Agent: Paul F. Seibold, Ex. Gp.: 354, Requester: Butler Manufacturing Co., Grandview, Mo.

Current Membership of Performance Review Board

This notice announces the current membership of the Performance Review Board for the Patent and Trademark Office. Since the last announcement of the membership in the Federal Register of July 22, 1981 (46 FR 37746), the terms of two of the members have expired and two new members have been appointed. The former members whose terms have expired are:

William Feldman,
Deputy Assistant Commissioner for Patents
U.S. Patent and Trademark Office,
Washington, D.C. 20231.

Jere W. Sears,
Deputy Solicitor
U.S. Patent and Trademark Office,
Washington, D.C. 20231.

The two new members are:

Donald J. Quigg,
Deputy Commissioner of Patents and Trademarks
U.S. Patent and Trademark Office,
Washington, D.C. 20231.

Bradford R. Huther,
Assistant Commissioner for Finance and Planning
U.S. Patent and Trademark Office,
Washington, D.C. 20231.

Each new member is appointed to serve as a permanent member and Mr. Quigg is designated to serve as Chairman. The current membership of the PRB is as follows:

Donald J. Quigg, Chairman,
Deputy Commissioner of Patents and Trademarks
U.S. Patent and Trademark Office,
Washington, D.C. 20231. Term-permanent.

Rene D. Tegtmeyer, Member,
Assistant Commissioner for Patents
U.S. Patent and Trademark Office,
Washington, D.C. 20231. Term-permanent.

Margaret M. Laurence, Member,
Assistant Commissioner for Trademarks
U.S. Patent and Trademark Office,
Washington, D.C. 20231. Term-permanent.

Richard J. Shakman, Member,
Assistant Commissioner for Administration
U.S. Patent and Trademark Office,
Washington, D.C. 20231. Term-permanent.

Bradford R. Huther, Member,
Assistant Commissioner for Finance and Planning
U.S. Patent and Trademark Office,
Washington, D.C. 20231. Term-permanent.

James O. Thomas, Jr., Member,
Director, Patent Examining Group 140
U.S. Patent and Trademark Office,
Washington, D.C. 20231. Term-expires Jan. 31, 1983.

Herbert C. Wamsley, Member,
Director Trademark Examining Operation
U.S. Patent and Trademark Office,
Washington, D.C. 20231. Term-expires Jan. 31, 1983.

Richard J. Wieland, (Outside) Member,
Assistant General Counsel for Litigation
HQ National Aeronautics and Space
Administration, Washington, D.C. 20546 Term-expires July 12, 1984.

Persons desiring any further information about the membership of the PRB may contact Mr. Aaron W. Deitch, Personnel Officer, U.S. Patent and Trademark Office, Washington, D.C. 20231. Telephone (703) 557-2662.

Gerald J. Mossinghoff,
Mar. 3, 1982 *Commissioner of Patents and Trademarks.*

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Post Office as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Kinetic International Fashions Inc., assignee of Kinetic International Fashions (U.S.A.), Montreal, Quebec, Canada, Reg. No. 1,092,860, for the mark "KIN SPORT", Canc. No. 12,916.

Jackson's Minit Markets, Inc., Jacksonville, Fla., Reg. No. 807,645, for the mark "MINIT MARKET" and design, Canc. No. 12,917.

Wayne Curtis, d.b.a. W.C. Co., Reseda, Calif., Reg. No. 1,090,089, for the mark "ACOUSTICLEAN", Canc. No. 12,946.

Iverson Cycle Corp., Medford, N.Y., Reg. No. 1,059,860, for the mark "GRAND TOURING", Canc. No. 12,952.

Richling, Ades & Richman, Inc., assignee of Moppets, Inc., New York, N.Y., Reg. No. 639,740, for the mark "MOPPETS", Canc. No. 12,956.

La Cade Products Co., Chicago, Ill., Reg. No. 1,087,119, for the mark "ULTRA MINK", Canc. No. 12,967.

Adria Industries, Inc., Brooklyn, N.Y. Reg. No. 1,153,256, for the mark "DADDY'S FAVORITE" and design, Canc. No. 12,998.

The H.P. Snyder Manufacturing Co., Inc., assignee of D.P. Harris Hardware & Manufacturing Co., Inc., Little Falls, N.Y., Reg. Nos. 619,386 and 1,047,626, for the mark "ROYAL" and design, Canc. No. 13,010.

The Earthcare Foundation, Boston, Mass., Reg. No. 1,099,855, for the mark "EARTHCARE" and design, Canc. No. 13,022.

Frank A. Wood, assignee, by mesne assignment, of Wood Brothers Co., Los Angeles, Calif., Reg. No. 768,767, for the mark "LITE-KING", Canc. No. 13,026.

The H. P. Snyder Manufacturing Co., Inc., assignee, by mesne assignment, of Excelsior Cycle Co., Little Falls, N.Y., Reg. No. 229,406, for the mark "CHAMPION", Canc. No. 13,033.

U.S. Home Security Systems Co., Sacramento, Calif., Reg. No. 1,064,308, for the mark "KEY LINK", Canc. No. 13,047.

Robert E. Swain, Pelham, N.H., Reg. No. 768,142, for the mark "STATE SIDE", Canc. No. 13,054.

David C. Pearson, d.b.a. Pearson Electronics, Anaheim, Calif., Reg. No. 1,142,290, for the mark "AUDIKON", Canc. No. 13,087.

10-X Manufacturing Co., Des Moines, Iowa, Reg. No. 762,372, for the mark "MAGNUM", Canc. No. 13,089.

Production Lithographing, Inc., d.b.a. PDQ Press, Crystal, Minn., Reg. No. 887,281, for the mark "PDQ PRESS", Canc. No. 13,095.

Tomlin Laboratories, Inc., Alexandria, Va., Reg. No. 1,098,514, for the mark "ULTRA SLIM" and design, Canc. No. 13,100.

Maricopa Telephone Co., Inc., Phoenix, Ariz., Reg. No. 1,057,434, for the mark "PROTOCOL", Canc. No. 13,101.

ClubAmerica, Inc., Dallas, Tex., Reg. No. 878,251, for the mark "CLUBAMERICA", Canc. No. 13,122.

EVELYN R. LOPEZ,
Clerk, Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner of Trademarks.

Status of PTO Services

The following is an update of the status of PTO services as of Mar. 5, 1982:

Service Item	Performance Goal (Calendar Days)	Actual	Comment
Mail Processing & Delivery	4	5.5	Increase due to replacement of 12 regular employees with RIF ees.
Filing Receipts:			
Patents	22	95	
Trademarks	30	29	Now being mailed before microfilming. Goal reduced by 12 days, actual by 13.
Patent Copies:			
Window Coupons	5	93% within 5 days 99% within 10 days	
Mail Coupons	15	81% within 15 days 99% within 20 days	
Letter Orders	20	83% within 20 days 99% within 30 days	
Certified Copies:			
Trademark Regs.	30	34	Reduction of 18 days in past month.
All other	Being established	95% within 15 days 99% within 30 days	
Trademark Search Room:			
Filing Drawings	21	17	Reduction of 9 days in past month.
Filing Reg. Certificates	3	2	Reduction of 8 days in past month.
Patent Assignments	15	66	Overtime halted due to unavailable funding.
Trademark Assignments	21	87	Overtime halted due to unavailable funding.
Patent Official Gazette	Issue Date	On schedule	
Patent Grants	Issue Date	3 days late	Delays reduced by 5 days since last month.
Trademark Official Gazette	Issue Date	On schedule	
Trademark Registrations	Issue Date	On schedule	

Mar. 8, 1982.

RICHARD J. SHAKMAN,
Assistant Commissioner for Administration

PATENT NOTICES

Certificates of Correction for the Week of Mar. 30, 1982

4,015,893	4,279,010	4,293,218	4,301,269
4,020,134	4,279,905	4,293,577	4,301,483
4,071,498	4,280,951	4,293,649	4,301,722
4,178,670	4,281,174	4,293,876	4,301,834
4,186,985	4,281,724	4,293,931	4,301,884
4,193,687	4,282,232	4,293,965	4,302,175
4,236,085	4,282,319	4,294,128	4,302,246
4,236,221	4,282,366	4,294,130	4,302,354
4,245,088	4,282,702	4,294,227	4,302,533
4,250,050	4,283,581	4,295,738	4,302,563
4,254,607	4,284,577	4,295,773	4,302,666
4,256,772	4,284,580	4,295,816	4,302,902
4,260,465	4,284,702	4,296,065	4,302,918
4,260,781	4,285,380	4,296,382	4,304,492
4,261,932	4,286,305	4,296,549	4,304,693
4,264,060	4,286,325	4,296,589	4,304,895
4,265,223	4,286,779	4,296,793	4,304,941
4,265,514	4,287,268	4,297,170	4,305,236
4,265,912	4,287,708	4,297,292	4,305,522
4,266,070	4,288,293	4,297,514	4,306,966
4,267,081	4,288,720	4,297,642	4,307,348
4,267,436	4,288,818	4,297,940	4,307,397
4,267,947	4,289,518	4,298,250	4,307,610
4,268,597	4,289,878	4,298,271	4,307,982
4,268,842	4,290,538	4,298,476	4,308,846
4,269,402	4,291,267	4,298,489	4,309,312
4,270,500	4,291,745	4,298,625	4,310,166
4,270,807	4,291,752	4,298,749	4,310,225
4,271,206	4,292,328	4,298,763	4,310,329
4,276,635	4,292,799	4,299,829	4,311,678
4,277,554	4,292,848	4,299,852	4,312,063
4,278,524	4,293,137	4,300,339	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 20, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-24-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-04-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-29-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-02-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	6-18-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	7-03-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-09-80
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	4-07-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-27-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director .... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-30-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-28-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	12-11-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	5-30-80

Expiration of patents: The patents within the range of numbers indicated below expire during February 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,167,778 to 3,171,130, inclusive

Plant Patents ..... Numbers 2,468 to 2,485 inclusive

REISSUES

MARCH 30, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,889

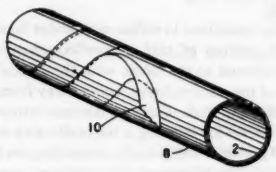
OUTER WRAP FOR PIPELINES

Frank E. McNulty, R.R. #1, Box 113, Siloam Springs, Ark. 72761

Original No. 4,014,370, dated Mar. 29, 1977, Ser. No. 615,388, Sep. 22, 1975. Application for reissue Jan. 19, 1979, Ser. No. 4,914

Int. Cl.³ F16L *9/02, 9/14*

U.S. Cl. 138—144 **9 Claims**



11. The combination consisting essentially of a section of metal conduit coated with a layer of cold flowable, adherent, waterproofing material over which and in direct contact with said material is wound a continuous strip of a fabric wrap woven of essentially flat thermal plastic fibers and having a porosity of not more than about 20% whereby the fibers of said wrap do not sink into said material and are sufficiently close to prevent said material from extruding through due to tension of said wrap from the application process or cold flowing through the openings in the said fabric, said tension being adequate to expell air between said material and wrap that is frequently entrapped due to the speed of the coating and wrapping procedure.

Re. 30,890

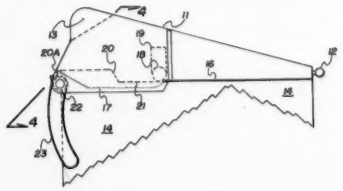
TRASH CONTAINER LID SYSTEM

Allan M. Hodge, 5852 Lomond Dr., San Diego, Calif. 92120

Original No. 3,994,415, dated Nov. 30, 1976, Ser. No. 634,049, Nov. 21, 1975. Continuation of Ser. No. 494,549, Aug. 5, 1974, abandoned. Application for reissue Nov. 28, 1978, Ser. No. 964,118

Int. Cl.³ B65D *43/16, 43/20*

U.S. Cl. 220—331 **10 Claims**



5. A trash bin and lid system of the type in which the trash bin is filled when it is in the normal upright orientation and is dumped by inverting the trash bin, comprising:

a trash bin;

a lid for said bin, said lid having a top and sides;

roller means for supporting said lid on the upper surface of each of the sides of said bin in the midportion of said lid to permit easy opening of said lid;

means for guiding and restraining the rear of said lid as it is opened, the guiding and restraining means including a pair of rollers extending laterally inwardly from the rear corners of said sides of said lid, and a pair of downwardly extending tracks secured to upper corners of said bin and encompassing said rollers, for guiding the position of the rear of said lid as it is partially opened using the roller supporting means while said bin is in the upright orientation;

means for stopping the movement of said lid in a partially open position when it is opened in the upright orientation;

counterweight means mounted adjacent the rear of said lid; and

said system including means to permit said lid to swing wide open with said lid pivoting about said rollers in one end of said tracks and with said roller supporting means and the stopping means not interacting between the bin and the lid when said bin is turned upside down for dumping and said lid may be partially opened with minimal force by slidable pivoting movement of said roller means for disposing of trash when the trash bin is upright.

Re. 30,891

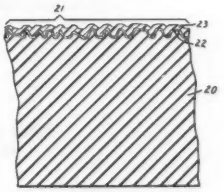
RESILIENT WOOD REPLICATION

Eugene L. Baratto, White Bear Township, Ramsey County, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Original No. 4,103,056, dated Jul. 25, 1978, Ser. No. 705,161, Jul. 14, 1976. Application for reissue Jul. 24, 1980, Ser. No. 171,756

Int. Cl.³ D06N *7/04*

U.S. Cl. 428—142 **7 Claims**



1. A resilient wood replication especially suited for use as floor covering comprising in combination:

(1) a resilient polyurethane elastomeric base at least 30 mils thick and having a molded textured wood-grain surface, said polyurethane elastomer *elastomeric base* being formed of a precursor material which has an initial liquid state permitting it to be poured into a mold having the negative of a wood grain pattern and being capable of nearly perfectly reproducing a counterpart of the mold's surface upon curing, forming an elastomeric product which is flexible, durable and tough, resilient, water-resistant and resistant to permanent deformation at temperatures in the range of about −30° to +70° C. and having an elongation at break of at least 50%, a tensile strength of at least about 100 psi, a hardness value within the range of about 20 to 90 Shore A durometer, a compressive strength in the range of about 150 to 4000 psi at 50% deflection and a tear strength which exceeds 20 lbs. per inch thickness;

(2) sufficient wood stain applied over said molded textured wood-grain surface to make it resemble stained wood; and

(3) a layer at least 1 mil thick of a clear, tough, abrasion-resistant, flexible, adherent polyurethane material overcoating the stained molded textured wood-grain surface.

Re. 30,892

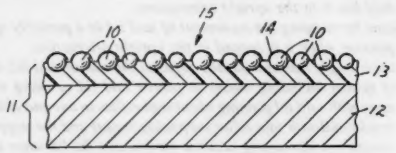
AREA-RETROREFLECTORIZATION OF FABRICS

Wallace K. Bingham, North Saint Paul, and Terry R. Bailey, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Original No. 4,103,060, dated Jul. 25, 1978, Ser. No. 766,332, Feb. 7, 1977. Continuation-in-part of Ser. No. 540,286, Jan. 10, 1975, abandoned. Application for reissue Apr. 11, 1979, Ser. No. 29,702

Int. Cl.[3] B32B *5/16, 17/06*

U.S. Cl. 428—241 40 Claims



1. Fabric treated on at least one surface with a discontinuous sparse retroreflective treatment that has low visibility in daylight but provides a bright retroreflection at night, said treatment comprising discrete separated retroreflective areas that each include a thin layer of binder material adhered to the fabric and separated from the binder material of other retroreflective areas, and one or more glass microspheres that average no more than about 200 micrometers in diameter supported as a monolayer in said layer of binder material; at least about one-third of microspheres adhered to the fabric in said retroreflective areas having specular reflective means in optical connection between them and the fabric and having their outwardly facing surface optically exposed for receiving and returning light rays, whereby they retroreflect incident light that is normal to the fabric; there being no more than about 2000 microspheres in any square centimeter of said treatment; and the maximum surface dimension of said retroreflective areas being no greater than about 1 millimeter.

15. A method for providing a retroreflective treatment on a fabric comprising

A. depositing onto the fabric a free-flowing mass of retroreflectorization particles that comprise (1) on the average no more than about fifty transparent microspheres arranged in a closely packed monolayer; (2) a solid binder layer in which the microspheres are supported and which may at least in part be softened to adhere the particles to the fabric; and (3) specular reflective means underlying the monolayer of microspheres and supported by the binder layer in optical connection with the microspheres whereby the microspheres are made retroreflective; the surface of the microspheres opposite from the reflective means being optically exposed to receive and return light rays; and

B. providing conditions to soften said binder layer, whereby at least a portion of said retroreflectorization particles become adhered to the fabric with the optically exposed surfaces of the microspheres facing away from the fabric.

18. A free-flowing mass of minute discrete retroreflectorization particles useful for forming a retroreflective coating on a substrate, said particles individually comprising on the average one up to about 50 transparent microspheres supported as a closely packed monolayer by a solid binder layer which may at least in part be softened to adhere the particles to a substrate; and specular reflective means underlying the microspheres and supported by the binder layer in optical connection with the microspheres to make the microspheres retroreflecting; the surface of the microspheres opposite from the reflective means being optically exposed whereby, when the particles are adhered to a substrate with said optically exposed surface facing away from the substrate, the microspheres will retroreflect light incident on the substrate.

PLANT PATENTS

GRANTED MARCH 30, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,832

ROSE PLANT

Dorothy J. S. Bailey, Bakersfield, Calif., assignor to San Joaquin Rose Co., McFarland, Calif.

Filed Sep. 8, 1980, Ser. No. 185,241

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by red and cream colored flowers produced on a vigorous, floriferous plant of good substance and long lasting quality on the plant and as cut flowers.

4,833

ROSE PLANT

Dorothy J. S. Bailey, Bakersfield, Calif., assignor to San Joaquin Rose Co., McFarland, Calif.

Filed Sep. 9, 1980, Ser. No. 185,661

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by large brilliant red flowers which hold color well upon aging, are borne primarily singly to a stem and are long lasting on the plant and as cut flowers.

4,834

ALMOND TREE

Frank Sorrenti, 3127 N. Leonard, Fresno, Calif. 93727

Filed Feb. 7, 1980, Ser. No. 119,624

Int. Cl.[3] A01H *5/03*

U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree substantially as shown and described.

PATENTS

GRANTED MAR. 30, 1982

ERRATA

For CLASS	See PATENT NO.
441–005	4,321,720
501–088	4,322,249
376–216	4,322,267
376–298	4,322,268
525–194	4,322,319
523–212	4,322,320
523–454	4,322,321
524–734	4,322,322
424–078	4,322,323
528–290	4,322,324
523–457	4,322,325
524–513	4,322,326
524–507	4,322,327
524–458	4,322,328
524–389	4,322,329
523–221	4,322,330
524–815	4,322,331
525–424	4,322,332
523–521	4,322,333
523–512	4,322,334
523–522	4,322,335
524–104	4,322,336
524–100	4,322,337
424–262	4,322,351
372–060	4,322,693
235–382	4,322,719

PATENTS

GRANTED MAR. 30, 1982

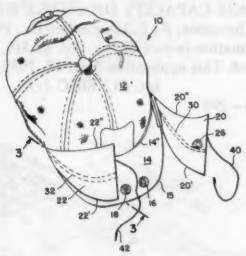
CORRECTED

PATENTS

GRANTED MARCH 30, 1982

GENERAL AND MECHANICAL

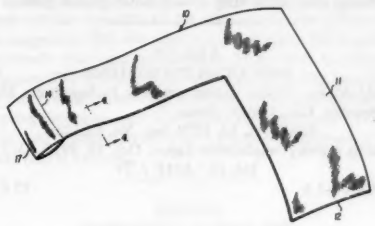
4,321,708
GOLF HAT WITH BLINDERS
Joseph Troiano, 80 Mahan St., West Babylon, N.Y. 11704
Filed Dec. 29, 1980, Ser. No. 221,035
Int. Cl.³ A42B *1/18*
U.S. Cl. 2—10 **1 Claim**



1. A golf hat comprising a main portion for covering a head; a visor extending outwardly from the front of said main portion; and a pair of blinders, said pair of blinders being mounted on either side of said visor for extension downwardly of said visor to protect the eyes of the wearer from the sun; said visor having a pair of hook and pile fasteners formed on the top surface thereof for engagement with a pair of hook and pile fasteners on said blinders, each said hook and pile fastener of said blinders being mounted adjacent the front forward edge thereof; each said pair of blinders also having a stiffening element on the inside surface thereof and extending from said front edge surface to the rear of a respective blinder along the entire length of the respective blinder; each said pair of blinders having a right triangular shape, with two edge surfaces perpendicular to each other and a curved front edge surface, said curved front edge surface having a curvature equal to the curvature of the front edge surface of said visor, and the rear edge surface of said blinder also being curved with a curvature equal to the curvature of the rear edge surface of said visor, each said blinder defining a cross-sectional area equal to half the cross-sectional area of said visor, so that when said pair of blinders are mounted upon the top surface of said visor, they conform to the shape thereof; said stiffening element of each said blinder having one of its ends terminating at the intersection of said front curved edge surface and said curved rear edge surface; the edge surface perpendicular to said curved rear edge surface being straight; and each of said pair of blinders having a string extending from said straight edge surface nearer said rear curved edge surface than said front curved edge surface whereby the blinders may be tied under the chin of a wearer when used to shade the sun.

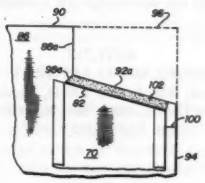
4,321,709
DECORATIVE SCARF
Ray Steinberg, 2631 E. West Hwy., Chevy Chase, Md. 20015
Filed Jan. 13, 1981, Ser. No. 224,837
Int. Cl.³ A42B *5/00*
U.S. Cl. 2—207 **3 Claims**

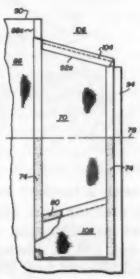
1. In a scarf made of 2 ply decorative material, comprising two rectangular portions positioned at right angle to each other, the first portion being narrower than the second portion, an end portion of said first portion is overlapped upon itself and stitched to form a narrow rectangular tubular section wherein



said second portion is threaded through said tubular portion to be fastened around the neck of a wearer in a ornamental design.

4,321,710
POCKET CONSTRUCTION
Joseph W. A. Off, Irving, Tex., assignor to Haggar Company, Dallas, Tex.
Continuation of Ser. No. 42,333, May 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 905,054, May 11, 1978, Pat. No. 4,156,293, which is a continuation of Ser. No. 819,843, Jul. 28, 1977, abandoned. This application Apr. 7, 1980, Ser. No. 138,080
Int. Cl.³ A41D *27/20*
U.S. Cl. 2—247 **37 Claims**





1. In a pocket construction method of the type wherein a generally rectangular pocket blank is connected to a garment panel adjacent to a pocket opening formed by removal of a corner of the garment panel, said pocket blank being transversely folded to form inner and outer pocket panels with a facing strip connected to said pocket blank, said pocket panels

being secured along the longitudinal edges thereof to seal the pocket, the improvement comprising the steps of:

folding a portion of the garment panel defining said pocket opening backwardly over a portion of the pocket blank;

adhesively securing the pocket blank to said garment panel;

positioning the facing strip adjacent to the outer pocket panel such that the pocket opening in the garment panel is covered when the pocket blank is folded transversely; and

securing said facing strip to said outer pocket panel.

4,321,711

VASCULAR PROSTHESIS

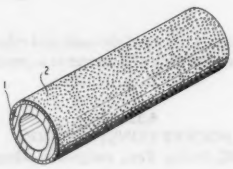
Hiroshi Mano, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 12, 1979, Ser. No. 84,323

Claims priority, application Japan, Oct. 18, 1978, 53/128695

Int. Cl.³ A61F *1/24*

U.S. Cl. 3—1.4 **17 Claims**



1. A vascular prosthesis comprising a porous polytetrafluoroethylene tubing having a microstructure composed of fibers and nodes, said nodes being connected to one another by the fibers, said tubing containing an anti-coagulant substance and having a porous elastomer coating bonded to the exterior thereof, said porous elastomer coating containing a substance which counteracts the anti-coagulant substance.

4,321,712

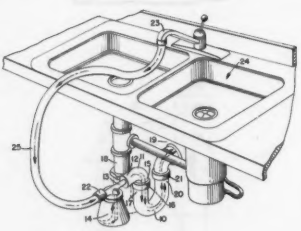
DEGREASING APPARATUS

Raymond F. Dixon, Rte. 4, Box 100 D, Hopkins, S.C. 29061

Filed Oct. 2, 1980, Ser. No. 193,360

Int. Cl.³ E03D *11/00*

U.S. Cl. 4—256 **1 Claim**



1. In combination with a blocked sink, hot water faucet, conventional washing machine hose and conventional liquid dispenser, an apparatus for degreasing or unblocking the U-trap of said blocked sink and its downstream piping, from a position in front of said blocked sink, comprising:

a small pipe elbow having an input end and an output end,

a hexagonal female coupling nut which mates said output end of said small pipe elbow to the input of said U-trap of said blocked sink after said U-trap has been uncoupled from sink drain pipe of said blocked sink,

said conventional liquid dispenser whose output nozzle is permanently mounted and sealed to said input end of said small pipe elbow for the purpose of injecting a mixture of hot water and degreasing solution into said small pipe elbow, said attached U-trap and downstream piping connected to said U-trap,

said conventional washing machine hose whose upper end mates with said hot water faucet of said blocked sink and whose lower end mates with the input of said conventional liquid dispenser for the purpose of conveying hot water from said hot water faucet to said conventional liquid dispenser and said attached small pipe elbow.

4,321,713

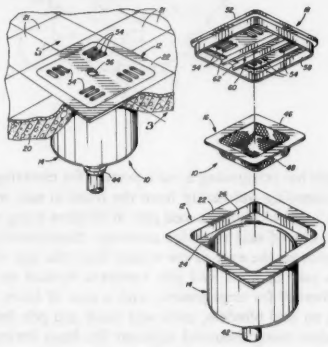
LARGE CAPACITY DRAINAGE RECEPTACLE

C. Ames Thompson, #1 E. Interlacken Dr., Phoenix, Ariz. 85022

Continuation-in-part of Ser. No. 93,310, Nov. 13, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,400

Int. Cl.³ E03C *1/26*

U.S. Cl. 4—290 **10 Claims**



1. A large capacity drainage receptacle for mounting in a surface to be drained comprising:

(a) a mounting flange for mounting flush in the surface to be drained and being formed of thin-wall metal, said mounting flange having an upper flange defining a central opening, an endless substantially vertical web integrally depending from the inner edge of said upper flange and a recessed flange extending integrally inwardly from the bottom edge of said web and defining a circular opening; and

(b) a receptacle body formed of thin-wall metal and fixedly attached to the downwardly facing surface of said recessed flange so as to be coaxial with the circular opening formed therein, said receptacle body being of circular cross section and having a closed bottom with a drainage outlet opening formed centrally therethrough.

4,321,714

APPARATUS FOR DEFECATING A URINAL BY MEANS OF FOAM

Souichi Takai, Tokyo; Yukinori Watanabe, and Kaname Matsumoto, both of Atsugi, all of Japan, assignors to Nepon Kabushiki Kaisha (NEPON Inc.), Tokyo, Japan

Filed Jan. 23, 1980, Ser. No. 114,534

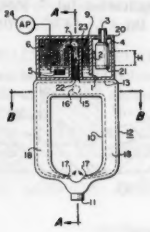
Claims priority, application Japan, Nov. 22, 1979, 54-161173[U]; Nov. 22, 1979, 54-161174[U]

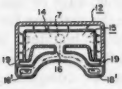
Int. Cl.³ A47K *11/00*; E03D *9/00*

U.S. Cl. 4—310 **4 Claims**

1. A urinal utilizing a foam defecating system having a front face being opened, a top wall, opposed sides and a rear wall, said sides and rear wall having an inside wall face and an outlet at its lower end, comprising; a casing and a foam supply pipe connected between said casing and the central portion of said urinal, a foam receiving dish, having side portions and a back portion including a plurality of notches for passing foam provided under the top wall of the urinal, to permit foam to flow

through said notches and down the whole surface of the inside wall face of the urinal, foam supply passages in vertical direction are provided on both sides of the open front face to a position adjacent to the outlet at the lower end of the urinal, a





foam supply hole provided on the front face of said foam receiving dish coupled to the upper end portion of said foam supply passages so that foam will flow down the foam supply passages and emerge from the openings of the foam supply passages to seal the outlet of the urinal.

4,321,715

WATER CLOSET SPRAYER

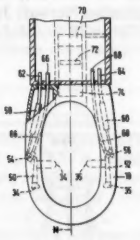
Heinz G. Baus, Ulmenweg 46, Thun, Switzerland

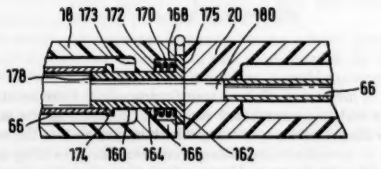
Filed Mar. 17, 1980, Ser. No. 131,009

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1979, 2912084

Int. Cl.³ A61H *35/00;* **E03D** *9/08;* **F16L** *25/00*

U.S. Cl. 4—420.2 **5 Claims**





1. An arrangement installable in the seat (18) of a water closet for washing and drying the lower parts of the body, having a spraying device rotatable into the closet bowl (10), by means of which preheated water may be conveyed to the parts of the body to be cleansed, and having a warm air blower (70) to be actuated following the completion of the spraying and cleansing process, wherein the spraying device comprises at least one spray nozzle (34, 35) mounted within a downwardly open cavity in the seat (18) and pivotable inwardly by means of a hydraulic or pneumatic actuating device comprising a piston-cylinder arrangement (58, 59), so that in its rest position said spraying device is located within the cavity and in its outwardly rotated position said spraying device is located off the center of the closet bowl, said seat being mounted on said water closet by means of a hinge such that a hinge joint gap (175) is formed between said seat and said water closet; and wherein tubular lines (62, 64, 66, 68) connect the piston-cylinder arrangement (58, 60) with a control valve for regulating the hydraulic fluid and the spraying device with a continuous flow heater (38), characterized in that each flexible line (62, 64, 66, 68) is divided at the hinge joint gap (175) and terminates in a coupling device at each side of the hinge joint gap (175) and that the two coupling devices form a sealed fluid passage when the seat (18) is lowered.

4,321,716

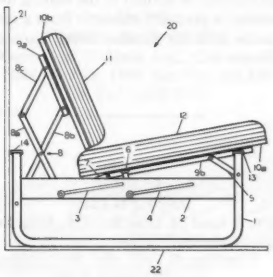
CONVERTIBLE SEAT-BED

Fred J. Shrock, 28884 Kehres, Elkhart, Ind. 46514

Filed Aug. 17, 1979, Ser. No. 67,361

Int. Cl.³ A47C *17/17*

U.S. Cl. 5—18 R **9 Claims**



1. In a convertible seat-bed assembly, a base, a seat support for supporting a seat cushion, a back support for supporting a back cushion; linkage means for supporting said seat and back supports from said base for movement between a seating position and a bed position, said linkage means including:

a first lever means for supporting and controlling said seat support in the seat and bed positions having a link means connecting said seat to said base including a link pivoted at one end for rotary movement and a guide at the other end allowing said link linear movement relative to said base;

second link means pivoted to said back support, said base and said link and guide of said first lever means for controlling the movement of the top back edge of said back cushion attached to said back support to move in a substantially vertical straight path from an upright position to a colapsed position forming a back of a seat in the upright position and part of a bed in the colapsed position.

4,321,717

SOFA BED

Felipe S. Serra, Santurce, P.R., assignor to Luis F. Segarra Boerman, Santurce, P.R.

Filed Jul. 11, 1980, Ser. No. 167,789

Int. Cl.³ A47C *17/16, 31/00*

U.S. Cl. 5—26 D **13 Claims**

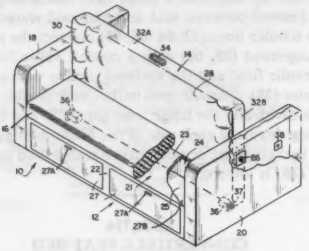
1. A sofa bed comprising:

a pair of parallel arms;

a top and a seat cushion disposed on the top and between said arms said cushion being removable from said top; and

a member comprising a backrest surface and a bed surface,

said member being disposed between said arms, and further comprising pivot means comprising a single pivot action and being disposed above said seat cushion and operatively connected to said member for moving said member, said seat cushion being unmoved from the top in the movement of said member, said pivot means being



disposed within the plane of said member, said pivot axis being midway between the sides of said member so that said member is balanced with respect to said pivot means and said member is upright in the seating mode, whereby said member is pivotally movable from a seating mode to a bed mode with the member being disposed above said seat cushion.

4,321,718

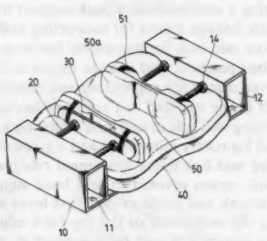
BABY PILLOW

Yenn J. Chern, 8, Lane 24, Hsin Kao Rd., Hsin Kwan Tsun, Tai Pin Hsiang, Taichung, Taiwan

Filed Dec. 9, 1980, Ser. No. 214,521

Int. Cl.³ A47G *9/00*

U.S. Cl. 5—437 **1 Claim**



1. A baby pillow comprising:

a support board provided with two hollow cases, one on each end thereof,

two protection boards, one connected with each of said hollow cases by means of screws through said cases, each screw having one end hidden in said cases;

two side cushions, one releasably bound onto each of said protection boards, each side cushion having two protrusions, one at each end thereof; and

a base cushion put upon said support board whereby a space constituted between said side cushions is adjustable by means of said screws, and a baby's head may be held in place between said side cushions with the baby's ear on each side being positioned between the protrusions on the side cushion on each side.

4,321,719

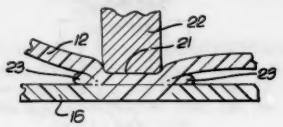
WATER MATTRESS WITH DAMPER BLADDERS

Carlos A. Mollura, 2824 Del Oro Pl., Fullerton, Calif. 92635

Continuation of Ser. No. 42,098, May 24, 1979, abandoned, which is a division of Ser. No. 894,427, Apr. 7, 1978, Pat. No. 4,167,432. This application Jul. 7, 1980, Ser. No. 165,983

Int. Cl.³ A47C *27/08*

U.S. Cl. 5—451 **2 Claims**



2. In a waterbed mattress:

(a) a pair of layers forming the top and bottom of a waterbed mattress;

(b) a series of individual bags or bladders arrayed in spaced relationship inside the mattress for damping wave motion therein, said bags or bladders being substantially uniformly distributed throughout the operative mattress area;

(c) each bag or bladder comprising a pair of juxtaposed plastic layers peripherally welded together; and

(d) the upper layer of each of the bags or bladders being welded to the top of the waterbed mattress, there being indentations on the inside of the bag or bladder layers, the outside of the mattress layers being substantially free of indentations, there being a bead formed between the welded layers which bead is extruded primarly from the bag or bladder layers.

4,321,720

METHOD OF TRANSFERRING A FLUID FROM A STATION ON THE SEA BED TO A VESSEL, OR VICE-VERSA, AND A MEANS AND A VESSEL FOR CARRYING OUT THE METHOD

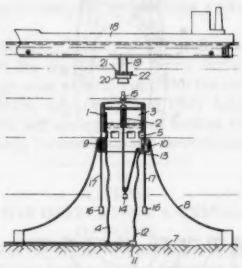
Odd Havre, Stasjonsveien 51/53, Oslo 3, Norway

Filed Jan. 15, 1979, Ser. No. 3,520

Claims priority, application Norway, Jan. 17, 1978, 780164

Int. Cl.³ B63B *21/52, 51/02*

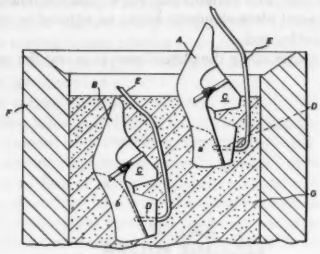
U.S. Cl. 441—5 **7 Claims**



1. A method of offshore transferring a fluid from a station on a sea bed to a vessel, and vice-versa, comprising the steps of providing a submerged buoy which is anchored to the sea bed and is movable to selective water depths, providing a flow coupling means on said buoy which is movable therewith and fixed horizontally thereto and in fluid flow connection with said station, providing means on said vessel adapted to be lowered into coupling engagement with said flow coupling means, positioning said vessel above said buoy and maintaining said vessel positioning by dynamic positioning, moving said buoy and coupling means to a water depth where the influence of wind and wave movements thereon is negligible, and lower-

ing said means on said vessel into coupling engagement with said coupling means at said water depth, raising said coupling means to said vessel and, establishing fluid flow connection between said vessel and said station through said coupling means on board said vessel.

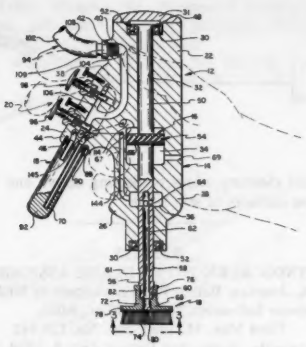
4,321,721
MANUFACTURE OF FOOTWEAR
Donald S. Painter, Comberton, and Christopher Graeme-Barber, Great Shelford, both of England, assignors to K. Shoemakers Limited, Kendal, England
Filed Mar. 4, 1980, Ser. No. 127,141
Claims priority, application United Kingdom, Mar. 9, 1979, 08329/79; Jul. 20, 1979, 25365/79
Int. Cl.³ A43D *9/00*; A43B *13/42*
U.S. Cl. 12—146 C **15 Claims**



1. A method of manufacturing a shoe which comprises the steps of cutting a stiffening element of fibre reinforced thermoplastic or thermo-setting plastics material to shape a stiffener in a flat form, inserting the stiffener between the lining of the shoe and the shoe upper, making the stiffener malleable, if necessary, by applying a small amount of heat, lasting the shoe upper, and then heat setting the shoe upper and the stiffener by immersing at least that part of the shoe which embodies the stiffener in a bath of fluidised solid material whereby heat transfer takes place uniformly across the shoe surface and forms or cures the stiffener over its whole area to the shape of the last.

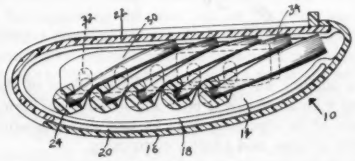
4,321,722
BURNISHING BRUSH STRUCTURE
Richard R. Klocke, Rte. 1, Box 3, Lindsborg, Kans. 67457
Filed Jan. 3, 1980, Ser. No. 109,227
Int. Cl.³ A46B *13/06*
U.S. Cl. 15—29 **6 Claims**

1. A burnishing brush structure operable to burnish a material into a support surface, comprising:
(a) a main housing assembly operable to be held, grasped, and maneuvered in a person's single hand;
(b) a power drive assembly mounted in said main housing assembly having a rotatable shaft member;
(c) a brush and container assembly having a brush member connected to an outer end of said shaft member for rotation thereof and a material container assembly connected to said main housing assembly;
(d) a power supply and actuator control assembly mounted in said main housing assembly and connected to said shaft member and said material container assembly;
(e) said power supply and actuator control assembly includes a motor supply and control assembly and a material dispensing and control assembly mounted in said main housing assembly;
(f) said motor supply and control assembly and said material dispensing and control assembly each having an actuator member mounted adjacent each other so as to be actuated by adjacent fingers on the person's single hand; and
(g) said actuator members being respectively and selectively actuated to (1) accurately control rotational speed of said



shaft member; and (2) precisely control the amount of material dispensed to said brush member.

4,321,723
TRAVEL HAIR BRUSH
Leonard R. Kortick, 88 Waldren Ave., Cranston, R.I. 02910
Filed May 19, 1980, Ser. No. 151,192
Int. Cl.³ A46B *9/10*
U.S. Cl. 15—184 **5 Claims**

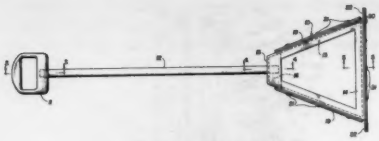


1. A travel hair brush comprising a housing having opposed spaced sides, a plurality of transverse bars extending between said sides, said bars being pivotally mounted on said sides, a row of bristles mounted on each of said bars, and means for pivoting said bars through substantially 90°, whereby said bristles are inclined to a generally flat position in said housing when said bars are pivoted in one direction and said bristles stand vertically for use as a hair brush when said bars are pivoted in the opposite direction, said housing also including a back wall curved around the back and ends of the sides, an inside portion extending along and spaced from said back wall, an articulated cover slidably guided in said sides from an open position on one side of said bars in the space along said back wall to a closed position on the opposite side of said bars and in contact with said bristles to press bristles toward said back wall in compressed position.

4,321,724
SNOW REMOVAL DEVICE FOR VEHICLES
James C. Samuels, 324 Pinecrest Rd., Springfield, Pa. 19064
Filed Oct. 7, 1980, Ser. No. 194,877
Int. Cl.³ B60S *3/04*
U.S. Cl. 15—245 **6 Claims**

1. A device for removing snow from surfaces of vehicles comprising a roughly triangular sweeping head including rearwardly converging sides and a forward transverse end, a manipulating handle attached to the rear of the sweeping head,

and blades of rubber-like material secured to said converging sides and forward transverse end of said head and having



longitudinal cleaning edges projecting above and below top and bottom surfaces of said head.

4,321,725

WINDSCREEN WIPER BLADE ASSEMBLY

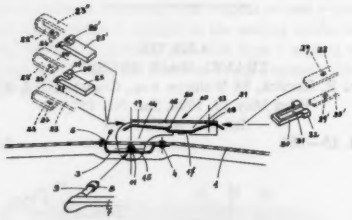
Maurice A. Journee, Reilly, France, assignor to NEFCO, Division Neiman Industries, Inc., Cadillac, Mich.

Filed Mar. 11, 1980, Ser. No. 129,441

Claims priority, application France, Oct. 8, 1979, 79 24950

Int. Cl.³ B60S *1/40*

U.S. Cl. 15—250.32 **5 Claims**



4. An adaptor for connecting a wiper blade of the type provided with a transverse bore and locking leaf spring to a wiper arm of the type including a locking stud or alternatively a window portion, said adaptor comprising

a spindle for location in said bore provided with a central constriction adapted to cooperate with said locking leaf spring,

a rider piece provided with a wall portion and having two arms extending therefrom for articulation on the said spindle,

a leaf spring being fixed by its central part to the rider piece, two arms on said leaf spring disposed longitudinally thereon, each of said arms being resiliently thrust towards said wall portion of the rider piece into a locking position, the said rider piece forming at its two extremities a passage for the introduction of the wiper arm extremity between the said wall portion and the adjacent arm of the leaf spring,

one of the arms of said leaf spring being equipped with a locking stud adapted to cooperate with the wiper arm of the type provided with the window portion, while the wall portion facing the other arm of said leaf spring is equipped with a window adapted to cooperate with the wiper arm of the type provided with the locking stud.

4,321,726

CABLE AND CONDUIT SHIELD

Arthur J. Rogers, Jr., and Marilyn J. Beardsley, both of 58 Old Webster Rd., Oxford, Mass. 01540

Filed Aug. 21, 1980, Ser. No. 180,033

Int. Cl.³ B65D *55/00*; F16L *5/00*

U.S. Cl. 16—2 **8 Claims**

1. A shield for cables and the like at the point of entry into a wall structure, comprising a pair of L-shaped flat plate elements, each of said elements consisting of:

(a) a base portion adapted to lie flat against a flat surface at the point of entry of the cable,

(b) a leg portion adapted to lie over the base of the other

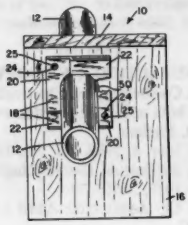


plate element to a variable degree, so that the inner edges of the joined plate elements define an adjustable opening for the cable, and

(c) means for fastening the plate elements to said flat surface.

4,321,727

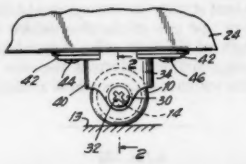
LUGGAGE ROLLER

Samuel R. Sheiman, and Julius Sheiman, both of c/o Crest Lock Co., Inc., 247 Centre St., New York, N.Y. 10013

Continuation-in-part of Ser. No. 21,449, Mar. 17, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 167,795

Int. Cl.³ B60B *33/00*; A47B *91/00*; A43C *5/00*

U.S. Cl. 16—18 R **6 Claims**

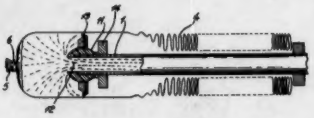


1. Identical luggage rollers for attachment to a piece of luggage in opposed transversely aligned pairs each adjacent to a different one of a pair of spaced sides of the luggage, each roller constituting a wheel of elastomeric material molded around an axially central sleeve of a material having a low coefficient of static and kinetic friction, a metal axle extending through said sleeve and projecting outwardly from both sides of said sleeve, said sleeve together with said wheel being rotatable about said axle, a bracket supporting the opposite ends of said axle, said bracket being fixedly connectable to said luggage, heads on opposite ends of the axle, at least one head being slotted to receive a screwdriver, said at least one head being detachably screw-connected to the axle, whereby when a wheel becomes defective it can be removed and replaced with a new one in the field with the use of a screwdriver, said wheel being in the configurations of a diabolo formed by the provision of an axially centered annular V-shaped wide-mouthed deep channel, the diameter of the wheel being from $\frac{3}{4}$" to $1\frac{1}{2}$", the width of the wheel being from $\frac{1}{2}$" to 1", the mouth of the channel being having a width of approximately $\frac{1}{2}$ the width of the wheel, the depth of the channel being about $\frac{1}{2}$ the width of the mouth, the sides of the roller being chamfered to provide a tread width of about $\frac{1}{4}$ the width of the mouth.

4,321,728
GLAND SEAL FOR STUFFER HORN

Horst F. Marz, Otterburn Park, Canada, assignor to C-I-L Inc., Montreal, Canada

Filed May 9, 1980, Ser. No. 148,568
Claims priority, application Canada, May 25, 1979, 328340
Int. Cl.³ A22C 11/02
U.S. Cl. 17—41 4 Claims



1. In combination with an extrusion chub container packaging apparatus having a filling horn over which a tubular packaging material is drawn, said horn having a filling passage and a gland sealing means adapted to engage an inner wall surface of said chub packaging material during extrusion filling thereof, an improved gland seal comprising:

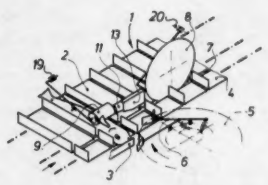
(a) a spherical element attached to the outlet end of the filling horn, said element having a passage therethrough in alignment with the filling horn, passage and

(b) a sealing ring element swivelly mounted upon the peripheral surface of said spherical element and radially extending therefrom to occupy the space between said spherical element and the inner wall of the surrounding tubular film material, said sealing element having at its radially outermost end means inclined to said package inner wall and contacting said package inner wall to form said gland seal.

4,321,729
APPARATUS FOR ALIGNING FISH

Reinhard Ollik, Lübeck, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH Co. & KG, Lubeck, Fed. Rep. of Germany

Filed Jul. 10, 1980, Ser. No. 168,200
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1980, 3003617
Int. Cl.³ A22C 25/08, 25/14
U.S. Cl. 17—63 9 Claims

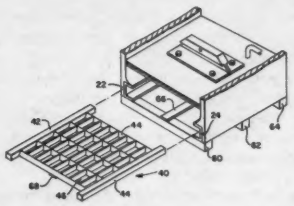


1. Apparatus for aligning fish in the position required for decapitation, said apparatus including means for conveying said fish lying on their side in a first or conveying direction essentially perpendicular to their longitudinal axis, a brake shoe having a catching edge adapted to slide along the body of said fish, and means for displacing said fish in a second or tail direction essentially perpendicular to said first direction, wherein a guide track is associated to said catching edge of said brake shoe upstream of said brake shoe when seen in said second direction of the longitudinal axis of the fish and forms a first unit with said brake shoe, said guide track having a guide edge directed, in use, toward said fish, and being spaced by a few millimeters in height over at least part of its length with respect to said catching edge, said catching edge and said guide edge together defining a gap extending in said first direction.

4,321,730
CORE BOX SUPPORTING MEANS FOR VIBRATORY TYPE CRAB PROCESSING MACHINE

Calvert B. Tolley, Wingate, Md.; Theodore S. Reinke, Rehoboth Beach, Del., and John C. Brooks, Cambridge, Md., assignors to Sea Savory, Inc., Cambridge, Md.

Filed Jul. 29, 1980, Ser. No. 173,363
Int. Cl.³ A22C 29/02
U.S. Cl. 17—71 1 Claim

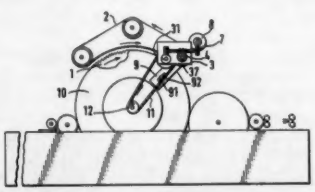


1. A machine for removing edible crab meat from the cores of crab bodies which have been cooked, de-shelled, de-legged and de-fingered and the body cavities of which have been cleaned out, comprising a generally horizontal core box including a bottom wall containing a plurality of discharge openings each of a size slightly smaller than that of a crab body, the crab bodies being arranged on the core box with their cavities facing downwardly over the discharge openings, a core box holder for supporting the core box in the machine, means for vertically vibrating the core box holder and the core box thereby to shake the edible crab meat from the crab bodies, and means for supporting the core box on the core box holder comprising a plurality of spaced parallel rigid elongated support members extending across and connected to the bottom of the core box holder, a first strip extending across and below the support members and connected thereto centrally of the lengths thereof, and a second strip extending across the lower surface of the core box and positioned to lie in surface-to-surface engagement with the upper surface of the first strip when the core box is positioned in the core box holder.

4,321,731
METHOD AND APPARATUS FOR DRIVING CARD FLATS

Hermann Kott, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Jun. 26, 1980, Ser. No. 163,078
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926812
Int. Cl.³ D01G 15/36, 15/78
U.S. Cl. 19—102 10 Claims



1. In a carding machine including a carding cylinder having an input side and an output side; traveling flats cooperating with the carding cylinder and having a rear end at the input side of the cylinder and a front end at the output side of the

cylinder; a drive gear having a driven side including an input shaft for operative connection with a driven member and a driving side for operative connection with said flats for revolving said flats; the improvement comprising

(a) a front drive shaft drivingly connected with the front end of said flats for driving said flats in a first revolving direction;

(b) a rear drive shaft drivingly connected with the rear end of said flats for driving said flats in a second revolving direction which is opposed to said first revolving direction;

(c) a first gear element forming part of said driven side of said drive gear; said first gear element having opposite sides to which said input shaft is selectively connectable;

(d) a second gear element forming part of said driving side of said drive gear and being operatively connected for rotation with said first gear element; said second gear element having opposite sides to which said front drive shaft or said rear drive shaft is selectively connectable; and

(e) a housing accommodating said drive gear; said housing including means defining

(1) a first and a second opening aligned with the respective opposite sides of said first gear element for providing passage for said input shaft of said drive gear; and

(2) a third and a fourth opening aligned with the respective opposite sides of said second gear element for providing passage for said front drive shaft or said rear drive shaft, respectively.

4,321,732

TUFT FEED CONTROL

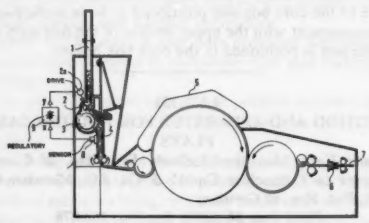
Ludwig Erben, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Aug. 1, 1979, Ser. No. 63,113

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1978, 2834586

Int. Cl.³ D01H *5/38*

U.S. Cl. 19—240 **11 Claims**



1. In an apparatus for regulating fiber tuft quantities introduced from a tuft feeding means into a carding machine; said tuft feeding means including a conduit through which the tufts pass and advancing means arranged in said conduit for forwarding the fiber tufts into the carding machine; the improvement comprising:

(a) pressure sensing means connected to said conduit downstream of said advancing means, as viewed in the direction of tuft feed, for generating pressure signals representing the pressure in said conduit;

(b) signal converting means for changing said pressure signals into analog electric signals; and

(c) regulating means connected to said signal converting means and said advancing means for receiving said analog electric signals from said signal converting means and for applying continuous setting signals to said advancing means as a function of said analog electric signals to continuously and steplessly control the feed of the fiber tuft quantities to said carding machine as a function of the pressure in said conduit.

4,321,733

SLIDE FASTENER STRINGER

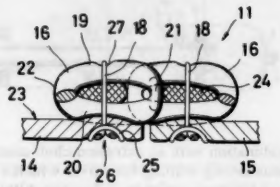
Hiroshi Yoshida, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Nov. 23, 1979, Ser. No. 97,430

Claims priority, application Japan, Dec. 7, 1978, 53-151855

Int. Cl.³ A44B *19/10*

U.S. Cl. 24—205.16 C **8 Claims**



1. A slide fastener stringer comprising:

(a) a stringer tape having a pair of opposite surfaces;

(b) a series of fastener elements each having a pair of spaced legs, one of said legs of each said fastener element being disposed on one of said surfaces of said stringer tape along its one longitudinal edge;

(c) a series of sewing stitches securing said fastener elements to said stringer tape, said sewing stitches being formed with a needle thread extending across and around every one of said fastener elements on said one surface of said tape and passing between every adjacent two of said fastener elements and through said tape, said needled thread having a succession of loops disposed on the other surface of said tape, each of said loops being intralooped with a preceding one of said loops such that a crossing of these adjacent two loops is disposed between adjacent two of said fastener elements, as viewed in a direction perpendicular to the general plane of said tape; and

(d) said needle thread including a thermally contractible monofilament yarn, said needle thread, after being sewn to said tape, being heat-set to shrink by thermal contraction and then become dimensionally stable, said crossing of each adjacent two loops being recessed in said other surface of said tape and located below the general plane of said other surface of the tape to thereby hold said fastener elements more tightly on said tape, there being flattened loop portions at said crossing of each adjacent two loops to thereby provide an enlarged area of frictional surfaces which serves to resist said sewing stitches from becoming loose all the way when said needle thread is broken, the other leg of each said fastener elements having in its surface remote from said tape a transversely extending recess in which a portion of said needle thread is received, said recesses being formed as said other legs are depressed on said surfaces by said needle thread, said crossing of each adjacent two loops being brought into a space between adjacent two of said one legs of the fastener elements, each of said adjacent two loops being welded at one of said crossings.

4,321,734

CLASP ASSEMBLY

Morris D. Gandelman, 212 Duxbury Ct., Warwick, R.I. 02886

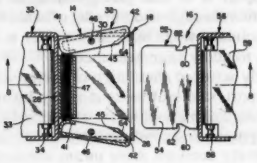
Filed Jun. 14, 1979, Ser. No. 48,480

Int. Cl.³ A44B *11/26*

U.S. Cl. 24—230 AT **14 Claims**

1. A clasp assembly for securing together the free ends of opposed flexible members, comprising a first coupling member joined to the free end of one of said flexible members and a second coupling member joined to the free end of the other flexible member, said first coupling member including a box element having a top wall and a bottom wall interconnected to said top wall and spaced therefrom, a transversely extending tubular portion located in said box element between said top

and bottom walls and formed as an integral extension of said top wall, a spring received in said tubular portion and projecting outwardly of the ends thereof, a pair of snap levers, each of which is pivotally mounted on a side of said box element, each of said snap levers having an interiorly located opening that defines a latch portion thereon, an interior portion of each snap lever being engageable by said spring, wherein said snap levers are normally urged to a locking position, each snap lever having an outer wall that defines a side wall of said first coupling member and that is aligned with the adjacent sides of said



flexible members to impart a similar appearance thereto, said second coupling member including an outwardly extending tongue that is formed with opposed notches that are engageable with the latch portions of said snap levers upon insertion of said tongue interiorly of the box element of said first coupling member to releasably secure said second coupling member to said first coupling member in a locked position, said snap levers being pivotally movable relative to said tongue against the action of said spring from the locked to an open position upon the application of a force thereto, wherein said tongue is released from engagement with said snap levers, for disengaging said coupling members.

4,321,735

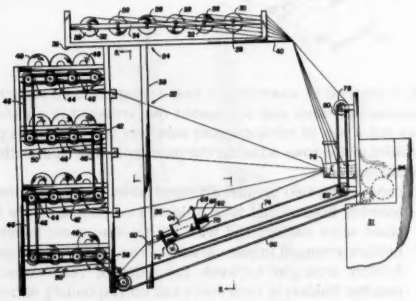
METHOD FOR FORMING A NARROW WEAVE FROM BARE ELASTOMERIC THREADS

Thomas C. Black, Middletown, Canada, assignor to J. P. Stevens and Company Inc., New York, N.Y.

Division of Ser. No. 831,457, Sep. 7, 1977, Pat. No. 4,164,963. This application Apr. 27, 1979, Ser. No. 34,882

Int. Cl.³ D03D *15/04, 15/08;* **D06C** *21/00, 23/04*

U.S. Cl. 28—155 **10 Claims**



1. A process for weaving a narrow elastic fabric comprising:

providing warp threads from a continuous supply which include elastomeric warp threads separated from each other by non-elastomeric warp threads with the edge warp threads being bare elastomeric;

loosely wrapping said elastomeric edge warp threads with a warp yarn between the supply of said elastomeric threads and the weaving area to produce a uniform warp edge; and

interweaving a heat shrinkable weft thread with said warp threads.

4,321,736

APPARATUS FOR EXTENDING A WARP FED TO A TUFTING MACHINE

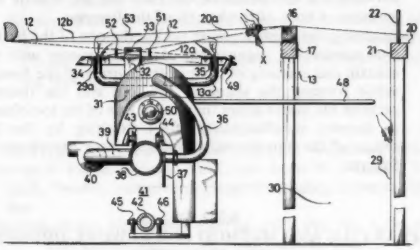
Joachim Rohner, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Bladbach, Fed. Rep. of Germany

Filed Jan. 17, 1980, Ser. No. 113,024

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1979, 2902003

Int. Cl.³ B65H *69/00;* **D03J** *1/18*

U.S. Cl. 28—210 **6 Claims**



1. In an apparatus for carrying out a method for extending a warp fed to a tufting machine with a pneumatic splicing device having a slicing head and first and second suction nozzles, the improvement comprising at least one thread accumulator including at least one beam and having at least part of a new warp wound thereon, a first holding device for holding trailing thread ends of the warp to be extended, said first holding device being disposed between the tufting machine and said at least one thread accumulator, and a second holding device for holding leading thread ends of the new warp, the pneumatic splicing device being operable for joining the leading and trailing threads and having the first suction nozzle disposed on a side of the splicing head facing the tufting machine for sucking in the leading thread ends of the new warp, and the second suction nozzle disposed on another side of the splicing head facing said at least one thread accumulator for sucking in the trailing ends of the warp to be extended, the pneumatic splicing device being disposed between the tufting machine and said first holding device.

4,321,737

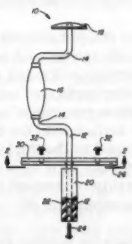
GUNSMITH'S TOOL

Jack McIntyre, P.O. Box 491, Troy, N.C. 27371

Filed Mar. 26, 1980, Ser. No. 134,028

Int. Cl.³ B23P *13/00*

U.S. Cl. 29—1.1 **8 Claims**



1. A method of simultaneously finishing the muzzle end surfaces of both barrels of a double-barrel shotgun or similar firearm by use of a gunsmith's tool including an elongate shank adapted to undergo rotation about its central axis when driven

at one end portion, a generally cylindrical guide member releasably and concentrically secured upon the other end portion of the tool shank and closely receivable within one of the firearm barrels through the muzzle thereof, file means connected to and projecting radially outwardly from a medial portion of the tool shank a distant sufficient for the file means to overlie the muzzle end surfaces of both of the barrels of the firearm when the tool shank is axially aligned with one of the barrels, comprising the steps of:

inserting the guide member of the tool into one barrel of the firearm through the muzzle thereof to axially align the tool shank and the barrel and to establish engagement between the file means of the tool and the muzzle end surfaces of both of the barrels of the firearm;

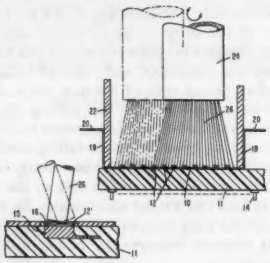
maintaining the guide member within the one of the barrels and maintaining engagement of the file means with the muzzle end surfaces of both of the barrels of the firearm while rotating the shank of the tool and the thereto-secured file means about the central axis of the tool shank, to thereby simultaneously effect finishing by the file means of the muzzle end surfaces of both barrels of the firearm.

4,321,738

APPARATUS AND METHOD FOR REWORK DRESSING OF A CHIP SITE

Manik P. Makhijani, Glenham, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed May 7, 1979, Ser. No. 36,912
Int. Cl.³ B23D *79/02*
U.S. Cl. 29—76 R **11 Claims**



1. The method of dressing a chip site on a substrate wherein a plurality of solder columns extend away from a surface of said substrate and are arranged in a pattern, comprising the steps of:

providing a mask having a plurality of holes arranged in a pattern corresponding to said pattern of solder columns, said mask having a thin body of a uniform thickness corresponding to the heights to which said solder columns are to be dressed;

fitting said mask over said columns on said chip site with one surface of said mask against said substrate and with said solder columns extending through said holes and projecting beyond the other surface of said mask;

and scraping away those portions of said columns projecting beyond said other surface until the heights of said columns are substantially equal to the thickness of said mask.

8. Apparatus for dressing pads of a chip site on a ceramic substrate having a plurality of remnant solder columns on said pads, comprising the combination of:

a base;

first means on said base for holding said substrate and selectively positioning a chip site thereon at a work station;

a mask having a flat thin flexible body provided with a plurality of holes therethrough arranged in a pattern corresponding to the locations of said pads and solder columns, said mask being harder than said solder columns;

a mask holder operatively mounted on said base for supporting said mask at said work station for selective movement between at least one position spaced from said chip site and a second position in which one surface of said mask is pressed against said substrate and said solder columns extend through said holes, said mask holder having an opening therein affording access to one side of said mask away from said substrate;

a support mounted on said base for movement between first and second positions;

optical means mounted on said support and operative, when said support is in said first position, to provide visual observation through said opening of said holes and of said solder columns when said mask holder is in said second position to allow alignment thereof;

a selectively actuated abrading tool operatively mounted on said support, said tool being movable through said opening into engagement with said one side of said mask when said support is in second position;

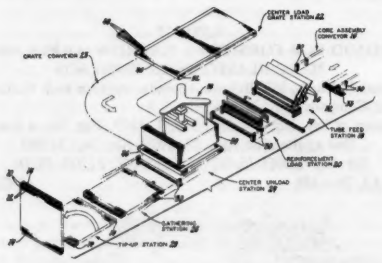
and selectively actuated drive means connected to operate said tool when engaged with said one side to remove solder from said columns until the height of such columns is substantially equal to the thickness of said mask.

4,321,739

METHOD AND APPARATUS FOR ASSEMBLING HEAT EXCHANGERS

William A. Martin, North Tonawanda, N.Y., and Harold H. Harper, Holiday Island, Ark., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 11, 1980, Ser. No. 158,608
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.3 A **2 Claims**



1. A method of assembling a heat exchanger core assembly comprised of tubes and corrugated fins arranged in alternate rows and a pair of reinforcement members arranged on opposite sides of the rows adjacent the outermost fins, said method comprising:

(a) conveying two parallel arranged series of reinforcement member holders and tube holders past consecutively located work stations and with the reinforcement member holders arranged in pairs in each series, and with the tube holders arranged between the pairs of reinforcement member holders in each series and corresponding in number to the number of rows of tubes in the core assembly,

(b) feeding a pair of reinforcement members at one of the work stations into the passing pairs of reinforcement member holders so that they are supported at their ends thereon with their backsides facing away from each other,

(c) feeding a tube at a subsequent work station into each of the passing tube holders so that they are supported at their ends thereon in the desired spaced relationship to each other and to the backsides of the reinforcement members between which they are thus held;

(d) loading a complete set of fins in a grate.

(e) feeding the set of fins from the grate at a subsequent work station into the spaces between the passing tubes and

reinforcement members to thereby form a complete core assembly, and

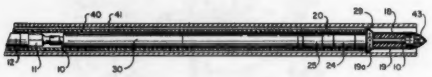
(f) unloading each complete core assembly from its holders while retaining it intact at a subsequent work station.

4,321,740

METHODS AND APPARATUS FOR RELINING SERVICE PIPE

George W. Davis, Warren; Hank Kulzer, Bridgewater, both of N.J., and Anker Nielsen, Holden, Mass., assignors to Inner-Tite Corporation, Springfield, N.J.

Filed May 13, 1980, Ser. No. 149,518
Int. Cl.[3] B21D *39/04*
U.S. Cl. 29—402.09 11 Claims



1. A method of relining a fluid transmission line from an access point on the line to a point remote therefrom comprising the steps of:

a. opening said transmission line at the access point, inserting a deformable stiffener in one end of a plastic liner;

b. inserting said plastic liner with said one end and stiffener first into the length of transmission line to be relined;

c. placing a plastic sealant around said one end of said plastic liner in place between said liner and transmission line; and

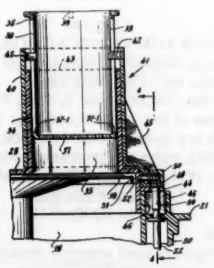
d. expanding said stiffener intermediate its ends in said one end of said liner forcing said liner into tight engagement with the transmission line.

4,321,741

METHOD FOR PROTECTING THE FEED TUBE OF A FOOD PROCESSOR

James E. Williams, Stamford, Conn., assignor to Wilson Research & Development, Inc., Greenwich, Conn.

Division of Ser. No. 17,822, Mar. 5, 1979, Pat. No. 4,226,373. This application Feb. 11, 1980, Ser. No. 120,692
Int. Cl.[3] B23P *19/00*
U.S. Cl. 29—434 2 Claims



1. In a method of constructing a food processor of the type including a housing containing an electric motor drive and control means in said housing for rendering said motor drive inoperative unless said control means is actuated, a bowl mountable on said housing for enclosing a rotatable tool within said bowl driveable by a tool drive shaft when said motor drive is rendered operative by actuation of said control means, a removable cover adapted to be locked on said bowl, with a feed tube mounted on said cover forming a passageway for pushing food items toward the rotating tool, the novel safety method of constructing the food processor comprising the steps of:

providing an outer sleeve nestable in predetermined position around the exterior of said feed tube;

capturing said food pusher in telescoping relationship with respect to said outer sleeve for enabling said food pusher to be moved longitudinally within said outer sleeve;

positioning said captured food pusher in alignment with the interior of said outer sleeve for causing said food pusher to become aligned with said food passageway and to be plungeable into said food passageway only when said outer sleeve is nested around said feed tube; and

allowing actuation of said control means in the food processor only when said outer sleeve is properly nested in said predetermined position around said feed tube;

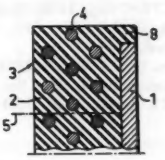
thereby inherently causing said food pusher to be blocking access through said passageway into the bowl whenever the motor drive is actuated for rotating the food processing tool in the bowl.

4,321,742

METHOD OF PRODUCING CURVED WEAR LINING

George P. Hurst, Jackson, Calif., and Assar N. Svensson, Ersmark, Sweden, assignors to Skega Aktiebolag, Ersmark, Sweden

Division of Ser. No. 48,596, Jun. 14, 1979, Pat. No. 4,234,291. This application Jul. 10, 1980, Ser. No. 168,448
Claims priority, application Sweden, Jun. 16, 1978, 7806952
Int. Cl.[3] B23P *9/00*
U.S. Cl. 29—445 2 Claims



1. A method of producing a curved wear lining comprising forming a planar assembly which includes a layer of wear rubber attached to a flat bendable support plate and a plurality of parallel, spaced-apart metal pins embedded in the rubber layer and arranged parallel to the support plate, and curing by bending the assembly to place the layer of rubber in compression with the compression increasing from the support plate toward the face of the layer remote from the support plate and to orient the pins in radial planes extending from the center of curvature.

4,321,743

TUBING JOINT METHOD OF ASSEMBLY

Ralph G. Ridenour, 626 Lexington-Ontario Rd., Mansfield, Ohio 44903

Division of Ser. No. 948,905, Oct. 5, 1978, Pat. No. 4,281,862, which is a continuation-in-part of Ser. No. 887,491, Mar. 17, 1978, Pat. No. 4,231,596. This application Aug. 29, 1980, Ser. No. 182,718
Int. Cl.[3] B21D *39/00*; B23P *11/00*
U.S. Cl. 29—516 11 Claims

1. The method of making a tube joint assembly by the use of two dies acting on inner and outer telescoped tubular parts having facing walls comprising, the steps of,

forming a plurality of peripheral ribs on the facing wall of one of the tubular parts with each rib having a laterally extending shoulder and a biting surface,

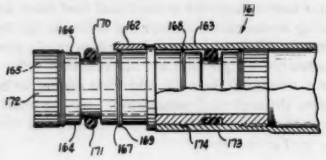
forming longitudinally extending ribs on one of said facing walls,

telescoping the outer tubular part over the inner tubular part,

laterally compressing the outer part inwardly by two dies

having interdigitated teeth to form on the exterior surface of the joint assembly a toothed area of a plurality of circumferentially extending teeth,

said lateral compression causing said biting surfaces to indent the facing wall of the other part and form a shoulder thereon acting longitudinally against said laterally extending shoulder to longitudinally retain together the tubular parts,



said lateral compression establishing a fluid pressuretight seal which includes an annular area at the junction of the parts generally at said biting surfaces,

and establishing torque-resisting means between the tubular parts by said laterally inward compression of the outer part embedding said longitudinally extending ribs into the other of said facing walls.

4,321,744

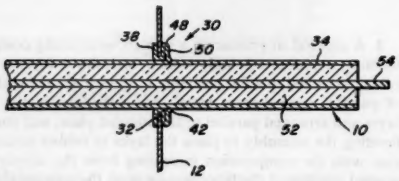
METHOD OF SECURING A METAL SHEATHED ELECTRIC HEATING ELEMENT

Donald W. Carnes, Cockeysville, Md., assignor to Electro-Therm, Inc., Laurel, Md.

Division of Ser. No. 19,120, Mar. 9, 1979, Pat. No. 4,241,291. This application Jul. 2, 1980, Ser. No. 165,331

Int. Cl.³ B21D *39/00*; B23P *11/02*

U.S. Cl. 29—523 **4 Claims**



1. The method of securing an electric heating element having a metal sheath to an apertured planar metallic bracket comprising the steps of:

positioning a tubular eyelet of relatively thin metallic material and having a terminal radial flange within the aperture of said bracket and in concentric surrounding relation to a linear portion of said heating element,

disposing the said flange of said eyelet in face-to-face relation to a substantially planar portion of said bracket adjacent the aperture therein,

supporting said flange axially of said element portion,

applying axial compressive force to an elongated axially extending tubular portion of said eyelet embracing said element and passing through the bracket aperture to buckle said tubular portion radially outwardly and shorten in length to form an outwardly extending flange-like portion thereof axially compressed against said bracket adjacent said aperture thereby to axially grip the bracket therebetween,

with said flange-like portion merging into an axially adjacent reversely folded and radially inwardly extending terminal flange in snug axial relation and contact with said flange-like portion, with said terminal flange at its radially inner extremity defining an opening of lesser effective diameter than said sheathed heating element thereby to mechanically engage the periphery thereof and secure the bracket thereto.

4,321,745

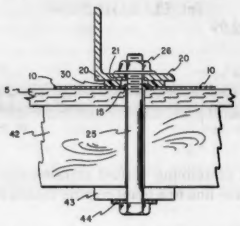
SEALING METHOD

R. Gary Ford, Memphis, Tenn., assignor to Energy Design Corp., Memphis, Tenn.

Filed Apr. 28, 1980, Ser. No. 144,354

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—526 R **1 Claim**



1. A method of fastening, in a weather-tight manner, a mounting support to a roof surface, comprising the steps of:

providing a sheet of flashing material;

forming a flared hole in said flashing which protrudes from the flashing;

forming a hole in said roof;

placing said flashing on said roof with the flared hole of said flashing being aligned with the hole in said roof and protruding upward from said roof;

applying a resilient pad on said roof flashing in the region of said flared hole and surrounding said flared hole;

bolting said mounting support to said roof surface by securing a bolt through said mounting support, said pad and said holes, said bolt engaging said mounting support and the underside of said roof surface so as to secure said mounting support to said roof surface with said roof flashing and said resilient pad pressed therebetween in the region of said flare.

4,321,746

TOOL CHANGER FOR VERTICAL BORING MACHINE

Claude M. Grinage, Stratford, Conn., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Division of Ser. No. 956,612, Nov. 1, 1978, Pat. No. 4,198,885, which is a division of Ser. No. 832,404, Sep. 12, 1977, Pat. No. 4,141,133, which is a division of Ser. No. 609,429, Sep. 2, 1975, Pat. No. 4,084,462, which is a continuation-in-part of Ser. No. 506,584, Sep. 16, 1974, Pat. No. 4,038,740. This application Oct. 7, 1979, Ser. No. 92,110

Int. Cl.³ B23Q *3/155*

U.S. Cl. 29—568 **5 Claims**

1. A tool storage carousel assembly including a plurality of tool blocks stored thereon, which comprises

(a) a rotatable turntable,

(b) each of said tool blocks having a top surface,

(c) the top surface of each of said tool blocks including an upwardly opening, clamping slot extending completely across the top surface,

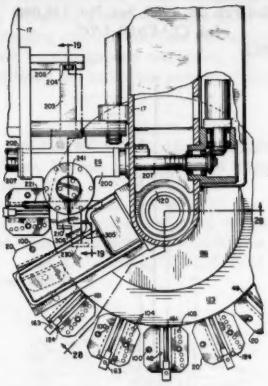
(d) said turntable having a plurality of radially projecting tool block supporting elements,

(e) each of said projecting tool block supporting elements being arranged and configured for slidable reception in the clamping slot of one of said tool blocks,

(f) each of said radially projecting tool block supporting elements including a recess means formed therein,

(g) each of the recess means cooperating with the upwardly

opening, clamping slot when the radially projecting tool block supporting element is received in said clamping slot to define an open space within said upwardly opening, clamping slot, whereby each of the upwardly opening,



clamping slots may selectively accommodate the simultaneous presence in said clamping slot of said radially projecting tool block supporting element and other tool block engaging means for engaging and transporting the tool block to and from said rotatable turntable.

4,321,747

METHOD OF MANUFACTURING A SOLID-STATE IMAGE SENSING DEVICE

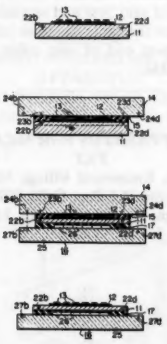
Yasuo Takemura, Kawasaki, and Okio Yoshida, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 23, 1979, Ser. No. 41,706

Claims priority, application Japan, May 30, 1978, 53/63883; May 30, 1978, 53/63884; May 30, 1978, 53/63885

Int. Cl.³ H01L *31/04*

U.S. Cl. 29—572 **1 Claim**



1. A method for manufacturing a solid-state image sensing device comprising the steps of:

forming a plurality of electrodes on an insulating layer overlying one surface of a semiconductor substrate;

bonding an auxiliary substrate to the electrodes and insulating layer on the semiconductor substrate;

polishing the other surface of the semiconductor substrate to a predetermined thickness;

bonding an optical color filter for permitting light of a predetermined wavelength to pass therethrough to the polished surface of the semiconductor substrate, said optical filter being a color stripe filter in which a plurality of color filter elements are arranged in a stripe fashion; and

removing the auxiliary substrate;

wherein registration marks are provided on one surface of a semiconductor substrate, first and second registration marks are provided on the surface of auxiliary substrate, and registration marks are provided on the surface of a color stripe filter, the bonding of said auxiliary substrate to said semiconductor substrate being effected such that the first registration marks of said auxiliary substrate are aligned with the corresponding registration marks of said semiconductor substrate and the bonding of a color stripe filter to the semiconductor substrate being effected such that the second registration marks of said auxiliary substrate are aligned with the corresponding registration marks of said color stripe filter.

4,321,748

SMALL DYNAMOELECTRIC MACHINE AND METHOD FOR MAKING SAME

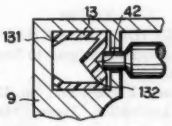
Isao Ito, Handa, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 850,033, Nov. 9, 1977, abandoned. This application Jan. 18, 1980, Ser. No. 113,199

Claims priority, application Japan, Dec. 2, 1976, 51-145440; Jul. 1, 1977, 52-877201

Int. Cl.³ H02K *15/14*

U.S. Cl. 29—596 **6 Claims**



1. A method for providing a predetermined amount of axial play for an end of the rotor shaft of the rotor of a small dynamoelectric machine with respect to the stator housing of this machine,

comprising the steps of:

providing said rotor shaft end with a generally convex end surface;

interposing a body of moldable plastic material in said recess between said shaft end and said stator housing, which plastic material has as an essential characteristic that it shrinks by a predetermined amount upon being hardened;

urging said shaft end toward said recess, in an act of installing said rotor shaft in said stator housing, sufficiently to deformably mold the plastic material between said shaft end and said stator housing until

(a) said body has a correspondingly concave axial end surface;

(b) said rotor shaft is correctly axially positioned with regard to the stator housing; and

limiting play of the rotor to a predetermined amount by hardening said plastic material while said rotor shaft remains having said correct axial positioning.

4,321,749

METHOD FOR PRODUCING SUPERCONDUCTORS

Kyoji Tachikawa; Kiyoshi Inoue, both of Tokyo, and Kazumasa Togano, Yokohama, all of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Continuation of Ser. No. 884,815, Mar. 9, 1978, abandoned. This application Nov. 2, 1979, Ser. No. 90,573

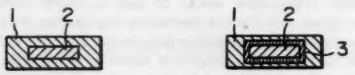
Claims priority, application Japan, May 2, 1977, 52-49005

Int. Cl.³ H01L *39/24*

U.S. Cl. 29—599 **14 Claims**

1. A method for producing a V_3Al superconductor which comprises

(1) making a composite composed of a sheath portion surrounding at least one core portion, said sheath portion being composed of an alloy of copper with a member selected from the group consisting of 1 to 15 atomic percent of silicon and 2 to 25 atomic percent of gallium and said core portion being composed of a vanadium-aluminum alloy containing 0.5 to 5 atomic percent of aluminum;



(2) elongating the composite; and

(3) then heat-treating the elongated composite to form a superconductor layer which is between the sheath portion and the core portion and which is composed of a superconductive pseudo-binary compound selected from the group consisting of $V_3(Al, Si)$ and $V_3(Al, Ga)$.

4,321,750

CHAIN GUIDE FOR A CHAIN SAW

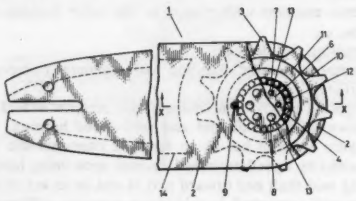
Hideo Sugihara, Gifu, Japan, assignor to Sugihara Rinki Kabushiki Kaisha, Gujo, Japan

Filed Mar. 12, 1980, Ser. No. 129,704

Claims priority, application Japan, Mar. 30, 1979, 54-42349[U]

Int. Cl.³ B27B *17/12*

U.S. Cl. 30—384 **8 Claims**



1. A chain guide for a chain saw comprising:

a pair of axially spaced side plates;

a cutting chain sprocket rotatably supported between said side plates and having a central hole axially extending therethrough;

an axle positioned within said central hole for rotatably accommodating said sprocket therearound;

the sides of said side plates facing one another respectively each having an annular groove therein, the annular grooves being concentric with and having a diameter greater than said central hole;

each of said side plates having an aperture therethrough located radially outwardly from the radial outer periphery of said axle and radially inwardly of said annular groove for supplying lubricant to said chain guide;

a pair of dish-shaped annular resilient seals, each respectively positioned in one of the annular grooves and having a radially outwardly extending and inclined annular lip for sealingly and slidably contacting the corresponding surface of said sprocket for maintaining lubricant within said chain guide.

4,321,751

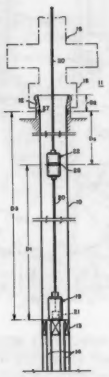
DEPTH MEASUREMENTS

Dale V. Johnson, Jefferson Parish, La., and Thomas W. Childers, Esher, England, assignors to Exxon Production Research Company, Houston, Tex.

Filed Feb. 29, 1980, Ser. No. 126,096

Int. Cl.³ C01B *3/00*

U.S. Cl. 33—126.5 **13 Claims**



1. A method for measuring at the surface the distance between a wellhead and downhole equipment located in a well comprising:

lowering a cable through said wellhead and into said well until the lower end of said cable rests on said downhole equipment and the cable becomes slack;

picking up and raising said cable;

generating a first signal just as said cable becomes taut and the lower end of said cable is raised off of said downhole equipment;

continuing to raise said cable and generating a second signal when a selected point on said cable passes a selected point in said wellhead;

measuring the distance said cable has been raised between the occurrence of said first and second signals; and

adding said distance the cable has been raised to the distance between the lower end of said cable and said selected point on said cable.

4,321,752

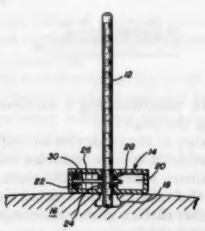
METHOD AND APPARATUS FOR MEASURING BODY FAT

Richard C. Kaufman, Kingswood Village Marina, 4145 A Via Marina-#108, Marina Del Rey, Calif. 90291

Filed Jan. 16, 1980, Ser. No. 114,104

Int. Cl.³ G01B *5/18*

U.S. Cl. 33—169 B **6 Claims**



1. An apparatus for measuring body fat, comprising:

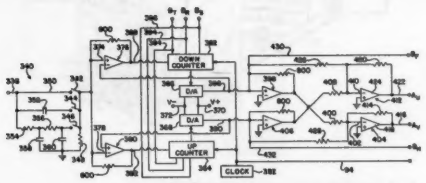
a base having a large planar lower contact surface and an

elongated scale slidably disposed through said base in perpendicular relation to said contact surface, said base comprising a hollow housing, said housing having mounted therein a spring clip biased against said scale for holding said scale in a preset condition, said apparatus further including a knob mounted upon said spring clip and extending through said base and accessible outside of said base for disengaging said spring clip from said scale by depressing the accessible portion of said knob.

4,321,753
ELECTRONIC GEAR CHECKER

Mario P. Fusari, Leyden, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 59,827, Jul. 23, 1979, Pat. No. 4,272,891, which is a continuation-in-part of Ser. No. 939,045, Sep. 1, 1978, abandoned. This application Oct. 1, 1980, Ser. No. 192,797
Int. Cl.³ G01B *7/00, 7/28, 7/30*
U.S. Cl. 33—179.5 B **4 Claims**

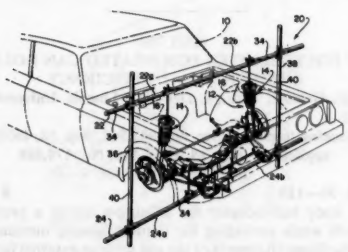


1. The use of successive approximation means in a system which produces an analog electrical signal that undergoes an analog signal excursion of a maximum magnitude in a particular direction from a reference level comprising the steps of establishing a stored digital count that is translatable into an initial analog signal level that is of a greater magnitude in said particular direction than said excursion, reducing said digital count in said particular direction in digital steps until it is translatable into a reduced analog signal level that is approximately equal to said excursion and producing an output that represents the value of said reduced analog signal level.

4,321,754
VEHICLE BODY-AND-FRAME ALIGNMENT APPARATUS

William Colby, 4431 N. Maple, Fresno, Calif. 93726

Filed Jul. 25, 1980, Ser. No. 172,380
Int. Cl.³ G01B *5/14*
U.S. Cl. 33—180 AT **10 Claims**



1. A vehicle body-and-frame-alignment apparatus for use in realigning the front-end structures of damaged unitized or unibody constructed vehicles which employ a pair of sliding strut-shock units as a front-end-suspension system, said apparatus comprising a substantially rectangular adjustable frame-gauge structure defined by:

an upper horizontal-gauge bar adapted to be positioned transversely over said strut-shock units;

a lower horizontal-gauge bar oppositely positioned to and in parallel relation with said upper horizontal-gauge bar, and adapted to be positioned transversely under said strut-shock units;

a pair of oppositely disposed vertical-gauge bars interconnected between said upper and lower horizontal-gauge bars, and adapted to be located on respective sides of said vehicle body;

means for adjustably mounting said gauge bars to form said substantially rectangular frame-gauge structure about said front-end structure of said vehicle;

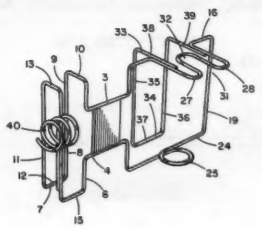
a first pair of gauge-positioning members slidably mounted to said upper horizontal bar so as to be selectively positioned on said sliding strut-shock units to support said frame-gauge structure about said vehicle body; and

at least one other gauge-positioning member slidably mounted to said lower horizontal bar to be selectively positioned at a given reference point on said vehicle.

4,321,755
PLUMB BOB HOLDER

Lester Illgen, Rte. 2 - Box 34, Lockport, Ill. 60441

Filed Mar. 10, 1980, Ser. No. 128,703
Int. Cl.³ G01C *15/10*
U.S. Cl. 33—393 **6 Claims**



1. A holder for a plumb bob, comprising a first planar member, a spool section on said first planar member on which to wind the cord of a plumb bob, a rack supporting section on said first planar member, rack means extending outwardly in a first direction from said rack supporting section to receive and hold a plumb bob, a second planar member spaced apart in a second opposite direction from said first planar member and extending substantially parallel thereto, spacing means to connect said second planar member to said first planar member and hold the same in said spaced apart relationship, a channel between the first and second planar members, said channel being open at one end to receive a supporting structure in said channel and between said first and second planar sections to support said holder for a plumb bob thereon, wherein said spool section, said rack supporting section, said rack means and said second planar member are integrally joined, wherein said spool section, said rack supporting section, said rack means and said second planar member are formed from a single length of material.

4,321,756
VEGETABLE DRYING APPARATUS

Jeannine Mosely, 48 Teel St., Arlington, Mass. 02174

Filed Oct. 31, 1980, Ser. No. 202,632
Int. Cl.³ F26B *5/08*
U.S. Cl. 34—8 **13 Claims**

1. A centrifuge for drying vegetables capable of being hung from a hook or hanger or folded or collapsed for storage, comprising

a smaller bag of a flexible perforate material for enclosing vegetables to be dried,

a larger bag of a flexible imperforate material for enclosing said perforate bag, and

means at the open ends of said bags for supporting said bags together with said perforate bag inside said imperforate bag for rapid manual rotation for removal of water from vegetables supported in said perforate bag by centrifugal force and collection of the removed water in said imperforate bag.

4,321,757

DRYING APPARATUS AND METHOD

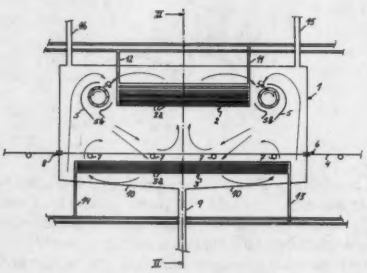
Laurens van der Blom, Venlo, Netherlands, assignor to Océ-van der Grinten N.V., Venlo, Netherlands

Filed Aug. 18, 1977, Ser. No. 825,688

Claims priority, application Netherlands, Aug. 20, 1976, 7609250

Int. Cl.³ F26B *3/00*

U.S. Cl. 34—23 **13 Claims**



11. In a method for drying material which has been treated with a liquid and for recovery of the liquid released from the material as vapor into a drying gas stream comprising guiding a web of the material through a chamber essentially closed to the external atmosphere, the chamber comprising a heating system and a vapor condensing system within the chamber, with the condensing system being located in the bottom of the chamber, the improvement therein comprising guiding the material through slot-like openings in the chamber and through the chamber above the condensing system as a web the wet surface of which is maintained free from contact, circulating drying gas in the chamber by means of a fan system, maintaining the edges of the material web spaced from inner side walls of the chamber so as to form elongated openings therebetween, dividing the drying gas into two streams, a main stream and a side stream, repeatedly circulating the drying gas and vapor contained therein past the wet surface of the web as the main-stream and through the elongated openings at the web edges, as the side-stream, to the condensing system located beneath the web, condensing the vapor and circulating the side-stream back to the main-stream as drying gas, supplying inert gas to the chamber to reduce the oxygen concentration therein and maintaining the dew point in the chamber at a high level.

4,321,758

HEAT CYCLING APPARATUS AND METHOD

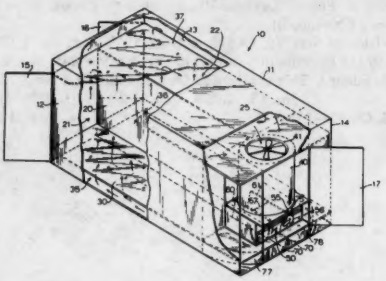
Joe W. Fowler, Rte. 2, Box 39, Reidsville, N.C. 27320

Division of Ser. No. 943,242, Sep. 18, 1978, Pat. No. 4,206,554. This application May 9, 1980, Ser. No. 148,255

The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.

Int. Cl.³ F26B *3/04*

U.S. Cl. 34—34 **6 Claims**



1. A heating apparatus, comprising:

(a) a structure having plural heating compartments;

(b) heat source means having means to heat and pressurize air passing therethrough;

(c) recirculating ducting and positionable baffle means associated with said heat source means and compartments, said ducting means including one plenum chamber communicating with one side of all said compartments and with said heat source means and other plenum chambers each of which communicates with only one of said compartments on an opposite side thereof and with said heat source means thereby enabling substantially the entire output of heated air from said heat source means to be directed through said other plenum chambers and opposite side of each said compartment separately dependent on positioning of said baffle means; and

(d) drive and timing means for switching said baffle means between selected positions on some predetermined repetitive time cycle whereby said baffle means operates to direct substantially the entire output of said heat source means to said other plenum chambers separately, successively and in a predetermined repetitive sequence and time cycle.

4,321,759

BODY BOLT ADAPTER FOR HEATED CAN ROLLS OF HIGH THERMAL EFFICIENCY

James E. Gamble, Box 18, Den Rd., Lincoln University, Pa. 19352

Continuation-in-part of Ser. No. 942,942, Sep. 18, 1978. This application Aug. 18, 1980, Ser. No. 178,888

Int. Cl.³ F26B *13/08*

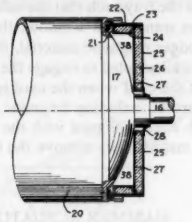
U.S. Cl. 34—110 **8 Claims**

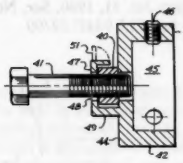
1. A body bolt adapter for affixing a nut to a protruding body bolt while providing for limited floating motion of the nut to: facilitate alignment of the nut with an external bolt to be received from an object that is to be attached to the protruding body bolt, comprising:

A. a body member comprising body member wall means disposed and adapted to encompass the protruding body bolt and cap means attached atop the wall means to define an interior cavity adapted to receive the protruding body bolt, said body member having associated grip means

adapted to bear against a side of a protruding body bolt that extends into the cavity to rigidly affix the body member to the protruding body bolt; and

B. nut retainer means rigidly affixed atop the cap means on a side of the cap means away from the interior cavity of the body member, said nut retainer means being adapted





to loosely receive and retain a floating nut that is adapted to receive and mate with an external bolt from an object that is to be attached to the protruding body bolt, the nut retainer means having a passageway for the external bolt to extend into the nut retainer means and mate with the retained nut.

4,321,760

NOZZLE STRUCTURE FOR MOISTENING OR IMPREGNATING A WEB

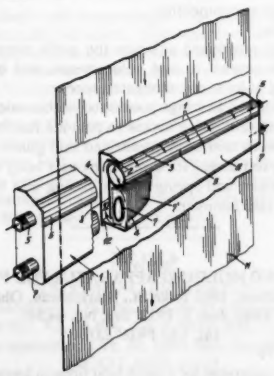
Paul Meier, Winkel, Switzerland, assignor to Bachofen & Meier, Bulach, Switzerland

Continuation of Ser. No. 912,614, Jun. 5, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 128,762

Claims priority, application Switzerland, Jun. 6, 1977, 6927/77

Int. Cl.³ F26B *13/02*

U.S. Cl. 34—155 **12 Claims**



1. A nozzle operative to apply a gaseous medium to a web of paper or the like to moisten or treat said web as said web is fed past said nozzle, said nozzle comprising an elongated housing adapted to extend in a direction transverse to the direction of feeding of the web across one face of the web, said housing including an elongated pipe extending therethrough at a position closely adjacent the web and parallel to said one face of said web, said pipe being adapted to be supplied with a gaseous medium, said housing further including a front wall extending downwardly from said pipe in a plane closely adjacent to but spaced from said one face of said web, a bottom wall spaced from said pipe and extending rearwardly from said front wall away from said one face of said web, a rear wall extending upwardly from said bottom wall to a position above said pipe, and a top wall extending from said rear wall toward said one face of said web, said top wall including an edge which is positioned adjacent to but spaced from an upper surface of said steam pipe to define an elongated nozzle outlet between said pipe and said top wall edge, an interior wall in said housing extending downwardly from said pipe in spaced relation to said front wall and rear wall, the lower edge of said interior wall being spaced from said bottom wall of said housing, heater means in the region defined between the bottom of said pipe, said front and interior walls, and said bottom wall, and a plurality of ports in said pipe opening into said region, whereby a gaseous medium passing through said pipe flows through said ports into said region and past said heater means between said front and interior walls, then passes through the space between the lower edge of said interior wall and said bottom wall, flows through the region defined between said interior wall, said rear wall, and a rear surface of said pipe, and emerges from said nozzle outlet toward said moving web to flow past said web in the space defined between a forward surface of said pipe and said front wall.

4,321,761

DEVICE FOR UPROOTING TREE STUMPS

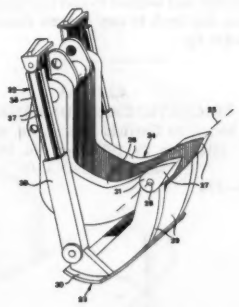
Sören Hedblom, Box 235, S-820 23 Bergvik, Sweden

Filed Jun. 17, 1980, Ser. No. 160,435

Claims priority, application Sweden, Jun. 20, 1979, 7905418

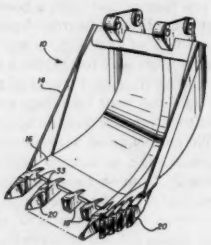
Int. Cl.³ A01G *23/06*

U.S. Cl. 37—2 R **6 Claims**



1. In a device for uprooting tree stumps from the ground, comprising a vehicle, an arm carried by the vehicle and a tool carried by the arm and engageable with a stump, said tool being pivotably connected to the arm and comprising a claw, which may be introduced under portions of the stump, and a support member for application against the ground, said support member being movable relative to the claw, a pressure exerting means connected to the support member being adapted to press the support member against the ground, while the claw is introduced under the stump, in order to cause the claw to move upwardly, thereby breaking loose the stump from the ground; the improvement that the support member is pivotably connected to the claw about an axis spaced from the pivotal connection of the tool to the arm.

4,321,762
DIGGING TOOTH APPARATUS FOR V BOTTOM BUCKET
Charles W. Hemphill, 800 S. Fifth Ave., Mansfield, Tex. 76063
Filed Oct. 17, 1979, Ser. No. 86,017
Int. Cl.³ E02F *9/28*
U.S. Cl. 37—141 R **15 Claims**



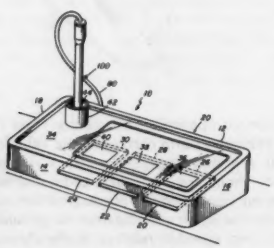
1. Digging bucket having a lip at the leading edge thereof and a plurality of shanks by which a plurality of digging teeth are mounted to said lip, there being a shank for each tooth; the improvement comprising:

said teeth include a forward ground engaging end and a rear end, said shanks having a forward marginal end member, means at said rear end by which said tooth is removably attached to the forward marginal end member of said shank;

said lip having opposed sides which extend laterally across the bucket and which are inclined respective to one another so that the teeth located on one side of the lip must be axially rotated along the longitudinal axis thereof respective to the teeth located on the other side of the lip, so that the ground engaging end of the teeth are properly oriented respective to the bucket lip;

said shank includes a rear marginal end member which is attached to said bucket lip, said forward marginal end member of said shank can be axially rotated along the longitudinal axis thereof respective to said rear marginal end member and welded to said rear marginal end member to orient the teeth in any desired direction respective to the bucket lip.

4,321,763
MAGNETIC CALENDAR HOLDER
Norman F. Soucy, 91 Garfield Ave., Lynn, Mass. 01905
Filed Sep. 29, 1980, Ser. No. 191,496
Int. Cl.³ G09D *3/10*
U.S. Cl. 40—120 **5 Claims**



1. A device for displaying calendar information which comprises:

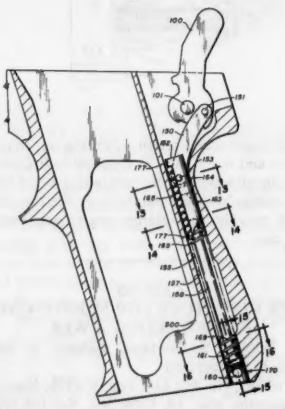
(a) a stand having at least one wall, the wall having at least one slot formed therein, and an outer surface joined to the wall, the surface having a transparent window;

(b) at least one tray formed within the stand, the slot fronting the tray and the surface of the tray in register with the transparent window, the tray including a rear wall and two side walls, one of said walls having magnetic material therein;

(c) a card having calendar information displayed thereon, the card dimensioned to slide through the slot and be received on the tray such that the information is displayed through the transparent window, the card including on one of its edges magnetic material, the magnetic material in the tray wall adapted to engage the magnetic material in the edge of the card when the card is inserted in the tray, the card further including magnetic material on another edge which edge is aligned with the slot; and,

(d) means to magnetically remove the card from the tray.

4,321,764
HAMMER ACTUATOR
Gary Wilhelm, Hamden, Conn., assignor to Llama Gabilonda y. Cia. S.A., Vitoria, Spain
Division of Ser. No. 951,967, Oct. 20, 1978, Pat. No. 4,275,640.
This application Jul. 31, 1980, Ser. No. 174,017
Int. Cl.³ F41C *19/00*
U.S. Cl. 42—69 B **4 Claims**



1. A hammer actuator for use in a gun of the type having a pivotal hammer, hammer pivotal between a withdrawn position and a position where the hammer impacts a firing pin, a hammer actuator comprising:

guide means;

body means positioned adjacent the guide means and slidable with respect to said guide means, said body means including at least one elongated recess;

a plurality of ball bearings positioned within said recess and contacting said guide means to provide for reduced friction between said body means and said guide means;

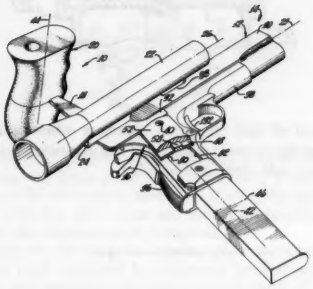
connecting rod means for connecting said body means with said hammer; and spring means biasing said body means towards said hammer.

4,321,765
TWO HANDED HOLDING APPARATUS FOR FIREARMS
Richard R. Gillum, 1002 Lake St., Marblehead, Ohio 43440
Filed Jun. 1, 1979, Ser. No. 44,567
Int. Cl.³ F41C *23/00*
U.S. Cl. 42—72 **18 Claims**

1. Holding apparatus for a hand held firearm having a barrel, which comprises:

(a) a first handle adapted for being held by one of a user's hands,

(b) means for fixing said first handle to the firearm to one side of a bore axis through said barrel,
(c) a second handle adapted for being held by the other one of a user's hands, and
(d) means for fixing said second handle to the firearm to a side of the barrel bore axis opposite to the side to which the first handle is fixed and in general transverse alignment, relative to the barrel bore axis, therewith so that the firearm can be held in an aiming position with both arms of a user equally extended, thereby enabling generally equal distribution of firing recoil forces between the user's two hands and generally equal and opposite holding moments thereby, muzzle jump being thereby substantially prevented.

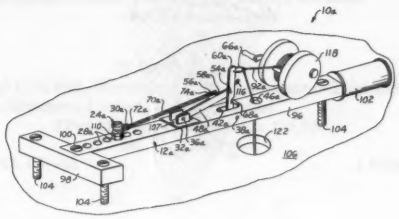


4,321,766
TROTLINERS AID
Homer I. Henderson, 2220 Live Oak St., San Angelo, Tex. 76901
Continuation-in-part of Ser. No. 69,117, Aug. 23, 1979, abandoned. This application Jan. 22, 1981, Ser. No. 227,399
Int. Cl.³ A01K *79/00*
U.S. Cl. 43—4 **2 Claims**

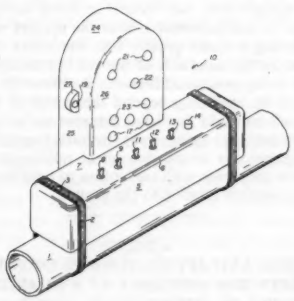
1. A trotliner's aid comprising a boat arm mounted to and extending laterally outwardly from the Trotliner's boat, said boat arm having multiple line retaining means rigidly and nonrotatably mounted thereon, each line retaining means extending a different distance from the boat, each line retaining means comprising a fixed semispherical bowl rigidly mounted on a flat surface of said boat arm, the lower part of said bowl forming a full circle V-shaped groove between said bowl and said flat surface, said groove being free of any line-destructive sharp edges, whereby when said trotline is wrapped around said line retaining means and is pulled into said groove it is frictionally held in said V-shaped groove.

4,321,767
ICE FISHING APPARATUS
Vincent B. Hodshire, 2701 NE. Adams St., Peoria, Ill. 61603
Division of Ser. No. 55,494, Jul. 6, 1979, Pat. No. 4,270,298. This application Oct. 20, 1980, Ser. No. 198,821
Int. Cl.³ A01K *97/01*
U.S. Cl. 43—15 **5 Claims**

1. A fishing apparatus comprising:
a main support member;
a first member pivotally connected at a first end to said main support member and movable between first and second positions;
a trigger member pivotally connected to a second end of said first member, said trigger having a plurality of notches formed therein;
means for retaining said trigger and said first member in said first position, said means including a pin connected to said main support for engagement with said notches in said trigger; and
means for resiliently urging said trigger and said first member toward said second position, said means for urging being connected between said first and second ends of said first member, and extending adjacent said first end of said first member and further being adjustably connected to said main support.



4,321,768
EDUCATIONALLY CORRELATIVE AMUSEMENT DEVICE
Ervin C. Engelhardt, 717 S. Pleasant, Lodi, Calif. 95240
Filed Jul. 10, 1980, Ser. No. 167,776
Int. Cl.³ A63H *33/26*
U.S. Cl. 46—227 **9 Claims**



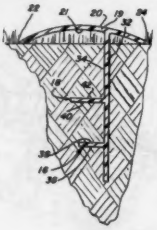
1. An educationally correlative amusement device comprising a housing adapted to be affixed to a bar portion of a child's automobile safety seat and having:
a source of power,
plural discreet display means,
and plural discreet switching means interposed between said source of power and said display means on said housing whereby each said discreet switching means correlates to only one of said display means thereby requiring the child to selectively engage said switching means to alter the total effect of said display means, wherein a first of said display means are lights simulating either a smile or a frown actuated by a three position toggle switch for selective engagement of a smile, frown, or neither.

4,321,769

EDGING STRIP

Cosmo N. Tisbo, and Thomas A. Tisbo, both of Barrington, Ill., assignors to Custom Plastics, Inc., Chicago, Ill.

Filed Jul. 28, 1980, Ser. No. 173,061
Int. Cl.³ A01G 1/08
U.S. Cl. 47—33 1 Claim



1. An elongated extruded polyethylene integral edging strip adapted for positioning in the ground to inhibit plant life from growing in an elongated narrow band of ground under a portion of the edging strip comprising; an elongated crowned cap adapted for positioning in a substantially horizontal attitude on an elongated narrow band of ground for shielding the elongated narrow band of ground to inhibit plant life from growing through or over the cap, said cap having a thin wall of a uniform thickness, the thin wall of the cap being convex on its upper side and concave on its inner side to allow opposed longitudinal edges of the cap to be placed into engagement with the ground, an elongated thin flat upright wall having one elongated edge formed integral with a portion of the concave inner side of the cap and being positioned closer to one longitudinal edge of the cap than to the other longitudinal edge of the cap, said upright wall being substantially coextensive with the cap, a lower lip formed integral with the upright wall, said lower lip being substantially perpendicular to and coextensive with the upright wall, the lower lip extending toward the other longitudinal edge of the cap, and a second lip formed integral with the upright wall, said second lip being substantially perpendicular to and coextensive with the upright wall, the second lip having a width greater than the lower lip and being positioned on the same side of the wall as the lower lip, said second lip being positioned between the lower lip and the cap, said second lip extending beyond the center of the cap, said upright wall and said lips being adapted to be buried in the ground beneath the cap, whereby the buried upright wall holds the cap against any lateral movement relative to the ground and the lips cooperate with each other to hold the cap against vertical movement relative to the ground.

4,321,770

METHOD AND APPARATUS FOR INSTALLING A SECURITY BAR ASSEMBLY AT A GUARDED AREA

John B. Mullins, Jr., 1412 N. Louise St., Santa Ana, Calif. 92706

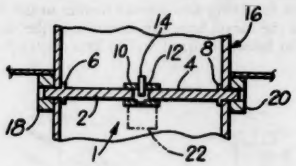
Filed May 12, 1980, Ser. No. 148,064
Int. Cl.³ E06B 3/68
U.S. Cl. 49—50 8 Claims

1. In combination with first and second structural members, a reliable and non-removable means extending between said structural members for preventing passage between said members, said preventing means comprising:

at least first and second elongated members, one end of each of said elongated members respectively received by openings formed in said first and second structural members,

coupling means to receive therein and to permanently interconnect the second ends of each of said elongated members, said coupling means having an opening formed through one side thereof, and

retaining pin means, said pin means inserted through the opening in said coupling means and in permanent receipt between the second ends of said first and second elongated members, whereby to inhibit lateral displacement and



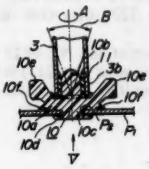
removal of said elongated members when said passage preventing means is installed in the assembled relationship between said structural members.

4,321,771

VEHICLE WINDOW GLASS GUIDING APPARATUS

Shoichi Koike, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 11, 1980, Ser. No. 158,533
Claims priority, application Japan, Jun. 18, 1979, 54-77292
Int. Cl.³ E05F 11/38
U.S. Cl. 49—360 5 Claims



1. An apparatus for guiding a lifting or lowering movement of a window glass of a vehicle, including a window regulator mechanism by which the window glass is lifted or lowered, and an elongate guide track member which slidably engages with the window glass and is connected on both end portions with a body or a door of the vehicle with respect to which the window glass is to be lifted or lowered, wherein the lower end of the guide track member is connected to said body or door of the vehicle by a mounting member consisting of resilient material and comprising:

(A) a base portion positioned between the lower end of the guide track member and a panel secured to said body or door of the vehicle;

(B) a crosspiece projected radially from a downwardly protruding extension formed on the lower surface of the base portion, which is passed through a correspondingly shaped bore formed in the panel and which is then rotated about the axis of the mounting member to engage with the periphery of the bore;

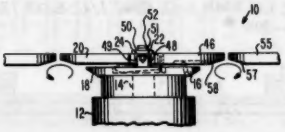
(C) a projection upwardly protruding from the base portion and fitted into a hollow portion forming said lower end of the guide track member; and

(D) a lip seal formed on the periphery of the base portion and resiliently urged against the periphery of the bore on opposite side of the panel which is not in contact with the crosspiece.

4,321,772
LEVELABLE LAPPING MACHINE

Douglas H. Ziegel, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1980, Ser. No. 145,050
Int. Cl.³ B24B 37/04
U.S. Cl. 51—109 R 18 Claims



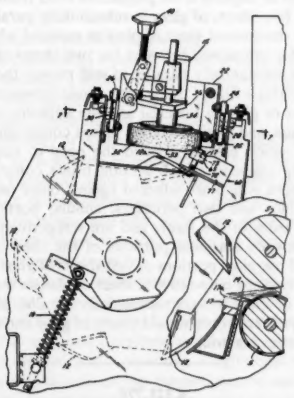
1. In a lapping machine which includes a drive plate, means for rotating the drive plate about its center, a lapping plate mounted on the drive plate, means for causing the lapping plate to rotate with the drive plate and means for leveling the lapping plate, the improvement comprising:

the means for leveling the lapping plate includes a pair of levers each mounted in a separate groove in the drive plate and engaging the lapping plate, each of the levers having a thickness at one end greater than the depth of the groove in the drive plate so as to project from the groove, tapering to a thickness at the other end less than the depth of the groove, and having a pair of pivot points at the thick end, one of the pivot points being seated on the bottom of the groove and the other projecting from the groove to engage the lapping plate, and means at the thinner end of each lever for adjustably pivoting the lever.

4,321,773
ROTARY CHOPPING CYLINDER TYPE FORAGE HARVESTER HAVING MEANS FOR SHARPENING ITS SHEAR BAR

Phillip F. Fleming, West Bend, Wis., assignor to Gehl Company, West Bend, Wis.

Filed Jun. 30, 1980, Ser. No. 163,984
Int. Cl.³ A01D 75/08; B24B 3/42, 19/00
U.S. Cl. 51—249 5 Claims

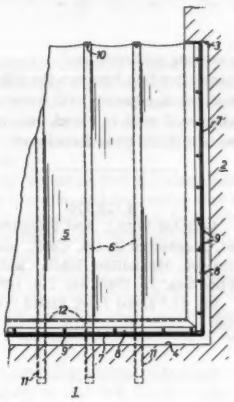


1. In a forage harvester of the type having a rotary chopping cylinder including a plurality of knives mounted around its periphery and a shear bar mounted adjacent the path generated by said knives and at the forward side of said cylinder when said bar is in an operative cutting position to provide cooperative crop cutting action with said knives, a knife sharpening unit located on said harvester and above said knives and including a rotatably driven grinding wheel, carriage means for mounting said grinding wheel for axial movement along said cylinder and over each of the knives to be sharpened, shear bar mounting means on said harvester and located above said cylinder and adjacent the path of axial movement of said grinding wheel, said mounting means including means for accurately and rigidly holding said shear bar in said mounting means when said bar has been removed from said operative cutting position whereby said knife sharpening grinding wheel can be passed over said shear bar to sharpen the latter.

4,321,774
FLOOD BARRIER

Daniel C. E. Fish, Wimbourne, England, assignor to Leigh Flexible Structures Limited, Walsall, England

Filed May 20, 1980, Ser. No. 151,634
Int. Cl.³ E02B 7/00
U.S. Cl. 52—63 2 Claims



1. A barrier assembly comprising a flexible flood barrier dimensioned to extend between opposed side walls of an enclosed space, when positioned between a floor and side walls each end of the barrier being secured in a vertically extending recess in the respective side wall forming a seal therebetween, and the base of the barrier being secured in a channel in the floor linking the recesses and forming a seal between the floor and barrier; and rigid uprights locatable in pre-formed floor sockets and engageable with the barrier to support the latter in an upright position, sufficient material being provided in the barrier to allow it to form generally semi-circular bulges between the uprights and to allow the assembly, when the uprights have been removed from the floor sockets, to be stowed in the vertical recesses and the channel with the ends of the barrier remaining secured in the vertical recesses and the base of the barrier remaining secured in the floor channel.

4,321,775
GREENHOUSE CONSTRUCTION

Hiram J. Emerson, Rte. 5, Box 106C, Jennings Rd., Statesville, N.C. 28677

Filed Jun. 7, 1979, Ser. No. 46,329
Int. Cl.³ E04B 1/346
U.S. Cl. 52—66 16 Claims

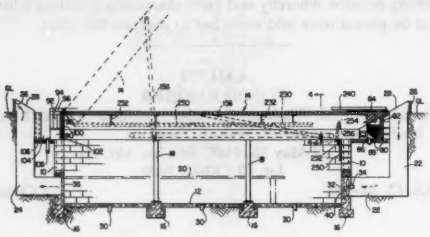
1. A building structure adapted to be located partially or entirely below the adjacent terrain, comprising:

(a) wall means defining an enclosure, said wall means being located at least partially below the adjacent terrain;

(b) frame means positioned above said wall means;

(c) a roof above said frame means, and when closed, entirely covering said enclosure;

(d) means for mounting said roof for movement relative to said frame so as to selectively expose said enclosure to natural light, said means for mounting said roof relative to said frame comprising a hinge assembly by means of which said roof can be raised from said frame about an axis through said hinge assembly,



(e) means for moving said roof, and

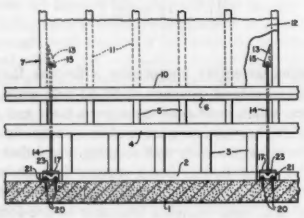
(f) curtain means extending between the sides and free end of said roof and points adjacent said frame means, with said curtains, when said roof is raised, providing a wind and weather resistant shield to said enclosure.

4,321,776

SHEAR WALL ANCHORING

Arthur Delight, Manhattan Beach, Calif., assignor to Art Delight Construction, Manhattan Beach, Calif.

Filed Sep. 22, 1980, Ser. No. 189,317
Int. Cl.[3] E04B *1/98;* E04H *9/02*
U.S. Cl. 52—167 4 Claims



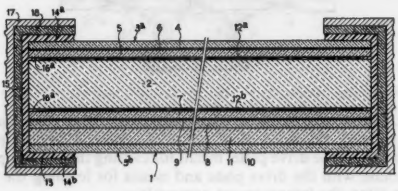
1. In a building having a concrete foundation supporting a shear wall that includes vertical studs at its ends, an upper bracket secured to one side of each end stud and provided with a vertical hole, a lower bracket on the foundation beneath each upper bracket, the portion of the lower bracket engaging the foundation being provided with a plurality of slots through it extending in a common direction, a plurality of laterally spaced bolts anchored in the concrete foundation and extending up through said slots for securing the lower bracket to the foundation, the centers of said bolts being substantially the same distance apart as the centers of said slots, the lower bracket having a wall spaced above the level of said slots and provided with an upper slot through it extending in a direction at a right angle to the lower slots, at least one of said slots extending lengthwise of the shear wall, a tie rod having its ends extending through said upper bracket hole and the upper slot in the lower bracket, a head on one end of the rod engaging the adjoining bracket, and a nut threaded on the opposite end of the rod and tightly engaging the other bracket to tie down the shear wall, the slots in the bottom of the lower bracket permitting adjustment of that bracket on the foundation to position it for receiving the lower end of said rod in said upper slot.

4,321,777

COMPOSITE PANE HAVING A HIGH RESISTANCE TO IMPACTS

Jacques Sauret, Cormeilles en Vexin, and Gerard Grosse, Paris, both of France, assignors to Brink's France S.A., Paris, France

Filed Jan. 28, 1980, Ser. No. 115,749
Claims priority, application France, Jan. 23, 1979, 79 01596
Int. Cl.[3] E04B *1/62;* E04C *1/42;* B32B *17/10*
U.S. Cl. 52—308 10 Claims



1. In a composite window pane specifically designed to resist impacts such as impacts from projectiles fired from fire-arms, comprising two sheets of glass in substantially parallel planes, at least one transparent sheet of polycarbonate which resists impacts and is interposed between the two sheets of glass and is in a plane substantially parallel to said planes; the improvement comprising a film of a transparent liquid between each face of said sheet of polycarbonate and the adjacent one of said sheets of glass, and flexible sealing means comprising a U-section frame which extends around the pane to constitute an outer sealing element, said U-section frame comprising two annular outer flanges which are adhered against outer faces of said sheets of glass, and two peripheral annular portions which project inwardly of the frame and are respectfully sealingly engaged between marginal portions of the sheet of polycarbonate and marginal portions of said sheets of glass and allow relative movements between said sheet of polycarbonate and said sheets of glass in said substantially parallel planes, said frame being adhered only to said sheets of glass and not to said sheet of polycarbonate.

2. In a composite window pane specifically designed to resist impacts such as impacts from projectiles fired from fire-arms, comprising two sheets of glass in substantially parallel planes, at least one transparent sheet of plastics material which resists impacts and is interposed between the two sheets of glass and is in a plane substantially parallel to said planes; the improvement comprising a film of transparent liquid between each face of said sheet of plastics material and the adjacent one of said sheets of glass, and flexible sealing means comprising a U-section frame which extends around the pane to constitute an outer sealing element, said U-section frame comprising two annular flanges which are adhered against outer faces of said sheets of glass, and two peripheral annular portions which project inwardly of the frame and are respectively sealingly engaged between marginal portions of the sheet of plastics material and marginal portions of said sheets of glass and allow relative movements between said sheet of plastics material and said sheets of glass in said substantially parallel planes, said frame being adhered only to said sheets of glass and not to said sheet of plastics material.

4,321,778

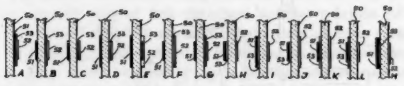
GLASS PANES AND BUILDINGS INCLUDING GLASS PANES

Merill Whitehead, Castle Hill, Australia, assignor to Twin View Glass, Inc., Spring Valley, N.Y.

Filed Sep. 17, 1979, Ser. No. 75,935
Int. Cl.[3] E04B *2/56;* A63B *61/00*
U.S. Cl. 52—397 15 Claims

1. A glass pane having a broken pattern of dots or lines formed by white opaque material applied to one side of the

glass pane with black opaque material applied to the other side of said glass pane, said dots or lines of the two materials being in substantial alignment and said black opaque material being placed upon a pattern of silver material, in the form of dots or lines, the pattern being such that concentrated light from one



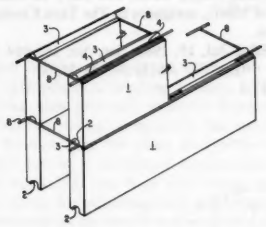
side of the glass is reflected to such an extent that persons on that side of the glass may see the wall and may "read" the path of an object moving relative to said wall whilst persons disposed on the other side of said wall may see through the wall to a sufficient extent to also follow the path of said moving object.

4,321,779

WALL SYSTEM UTILIZING INTERLOCKING BLOCK AND TIES

James Kratchmer, Blackie, Canada, assignor to Speed-Form Manufacturing Ltd., Canada

Filed Aug. 20, 1979, Ser. No. 67,906
Int. Cl.³ E04B *2/00*
U.S. Cl. 52—425 **9 Claims**



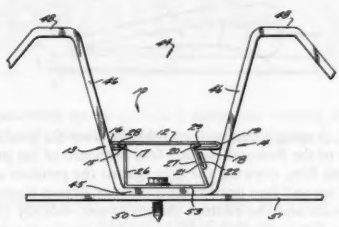
1. A system for constructing a wall,
said wall comprising a pair of spaced parallel relatively thin walls defining a hollow space therebetween adapted to be filled with poured-in-place concrete;
said system comprising in combination:
(a) a plurality of H-shaped ties formed from rod-like material, each said tie comprising a pair of parallel spaced side members joined by a cross-member extending between points intermediate the ends of the respective side members whereby each side member comprises two rod-shaped legs one extending from each side of said cross-member; and
(b) a plurality of wall elements, each said wall element having a top, a bottom, an interior and an exterior generally rectangular side surface and two end surfaces, and at least one longitudinal groove in the top or bottom thereof, and a matching longitudinal ridge in the opposite bottom or top thereof, second and third horizontal longitudinally extending grooves on at least the top of the wall element, both being parallel to the first longitudinal groove, the second and third grooves being located in the region of the respective ends of the top of the wall element, each of said second and third grooves lying in the same longitudinal line at the exterior side of the longitudinal ridge or groove in the top of the wall element, and being so configured as to accommodate one leg of one of said H-shaped ties.

4,321,780

SNAP CAP FOR ARCHITECTURAL WALL PANEL

Christopher C. Hooper, Decatur; Burlan E. Ellison, Duluth, and Harry P. Spranca, Dunwoody, all of Ga., assignors to Atlantic Building Systems, Inc., Atlanta, Ga.

Filed Jul. 12, 1979, Ser. No. 57,006
Int. Cl.³ E04C *1/34*
U.S. Cl. 52—506 **12 Claims**



1. A capped assembly for a metal panel system, comprising
a spring clip including a pair of clip arms each extending upwardly from a body portion, and having first and second flanges, one extending generally perpendicularly to each of said clip arms, and said flanges extending in opposite directions;
an elongated cap, including first and second ends, cooperating with said clip arms and for locking with said clip arms cap including a substantially planar body portion intermediate said first and second ends thereof;
said clip arm from which said first flange extends being substantially perpendicular to said cap planar body portion, and said clip arm from which said second flange extends making a positive angle with respect to said cap planar body portion, slanting inwardly toward said other clip arm;
pivot means for providing pivotal movement of said cap first end with respect to said first flange so that said cap can pivot about said first flange without displacement of its associated arm, and so that said second end of said cap will pivot into engagement with said second flange, said pivot means including said cap comprising a body portion, and a turned-back, looped portion terminating in a free end, for engaging and surrounding said first flange on three sides;
said second end of said cap formed to provide a cam extending inwardly toward said clip arms; and
resilient means provided with at least one of a said clip arm and said cap second end to provide for relative movement of said cam and said second flange when said cam is pivoted into engagement with said second flange so that said cam will pass said second flange and move into locked engagement with said clip arms, said resilient means comprising the inherent resilience of said clip arm from which said second flange extends and the inherent resilience of said cap adjacent said cam portion thereof.

4,321,781

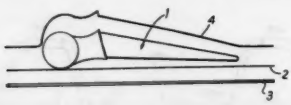
PROCESS FOR PRODUCING A PACKAGE

Rolande E. Hall, Shannon, Ireland, assignor to Howmedica Management & Technical Services, Limited, Stanmore, England

Continuation of Ser. No. 948,475, Oct. 4, 1978, abandoned. This application Jun. 2, 1980, Ser. No. 155,229
Claims priority, application United Kingdom, Oct. 12, 1977, 42352/77
Int. Cl.³ B65B *11/52*
U.S. Cl. 53—427 **7 Claims**

1. A process of producing a package for a product comprising the steps of providing a first wall of porous spun bonded polyolefin material of a first predetermined thickness as de-

fined between first and second opposite faces thereof, providing a second wall of porous material of a second predetermined thickness as defined between first and second opposite faces thereof, said second predetermined thickness being greater than said first predetermined thickness, disposing a coating between said first faces for adhering the first and second porous walls together, placing a product on the second face of the



first wall, draping a thermoformable film over the product and a portion of the first wall second face outboard of the product, heating the film, drawing the film against the product and the first wall second face portion by a vacuum drawn through the porous walls and the coating therebetween, thereby bonding the drawn film to the first wall second face during the drawing operation.

4,321,782

DROP CRUSHING DEVICE

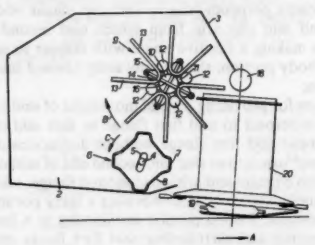
Petrus W. Zweegers, Nieuwendijk 46, Geldrop, Netherlands

Filed Jul. 28, 1980, Ser. No. 172,549

Claims priority, application Netherlands, Aug. 30, 1979, 7906505

Int. Cl.³ A01D *49/00*

U.S. Cl. 56—1 **10 Claims**



1. A device for crushing crops comprising two crushing members arranged to rotate about substantially parallel rotary axes, one of said crushing members is provided with a plurality of fillets extending substantially in the direction of the length of the crushing member and arranged at equal intervals around the circumference of the crushing member, and the other crushing member is provided with a plurality of flexible wings extending radially outwardly from its rotary axis along the length thereof.

4,321,783

MID-MOUNTED MOWER

Masami Kawasaki, and Hirofumi Sadakane, both of Sakai, Japan, assignors to Kubota, Ltd., Osaka, Japan

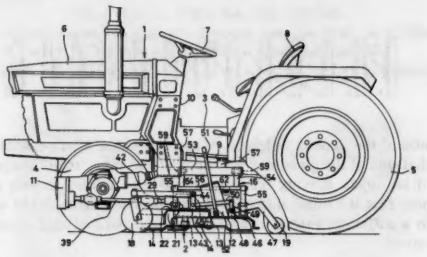
Filed Mar. 27, 1980, Ser. No. 134,454

Claims priority, application Japan, Apr. 7, 1979, 54-46126[U]; Aug. 20, 1979, 54-115124[U]; Aug. 22, 1979, 54-116198[U]

Int. Cl.³ A01D *35/264, 55/28*

U.S. Cl. 56—15.8 **12 Claims**

1. A mid-mounted mower comprising a mower frame disposed below a vehicle body and adapted to be run by the vehicle body in contact with the ground during mowing, cutting blades rotatably supported by the mower frame, a drive unit constituting at least part of a system for driving the blades and mounted on the mower frame, a pair of opposed flexible link assemblies upwardly or downwardly movably suspending the mower frame from the vehicle body, and lifting means for upwardly or downwardly moving the mower frame by flexing or stretching the flexible link assemblies substantially to the same extent, the flexible link assemblies being each flexible only about an axis extending longitudinally of the vehicle



body, whereby the mower frame is adapted to remain in contact with the ground during the travel of the vehicle body without permitting the mower frame to move relative to the vehicle body longitudinally thereof, and said link assemblies being flexible each about its axis independently of each other to cause the mower frame to follow the ground during mowing.

4,321,784

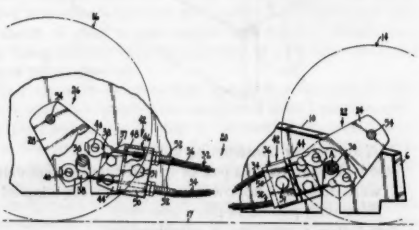
HEIGHT OF CUT ADJUSTMENT

William D. Wood, Maple Lake, and Gary R. Lamusga, Prior Lake, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Jul. 15, 1980, Ser. No. 169,064

Int. Cl.³ A01D *53/00, 53/08*

U.S. Cl. 56—17.2 **10 Claims**



1. An improved lawn mower for cutting grass or other vegetation, which comprises:

(a) a housing having front and rear sides;

(b) a plurality of rotatable front and rear ground engaging wheels, wherein each wheel is carried adjacent one corner of the housing for rollably supporting the housing for movement over a ground surface;

(c) means carried on the housing for cutting vegetation at a pre-determined height above the ground; and

(d) means for adjusting the pre-determined height of cut wherein the height of cut adjusting means comprises:

(i) a link member rotatably carried on the housing adjacent each corner thereof for rotation about an axis of rotation fixed relative to the housing;

(ii) means for rotatably coupling the link members adjacent the front side of the housing in a first pair and the link members adjacent the rear side of the housing in a second pair for joint rotation of the link members in each pair;

(iii) means for rotatably supporting each of the wheels on one of the link members eccentrically offset from the axis of rotation of the link member such that rotation of

the link member varies the position of the attached ground engaging wheel with respect to the housing for varying the height of the housing above the ground surface, whereby the height of cut is varied;

(iv) means for rotating a selected one of the link members about its axis of rotation; and

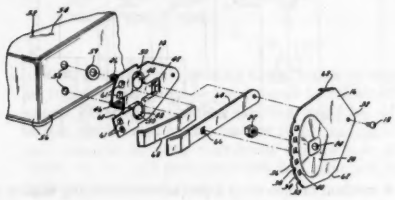
(v) means for transmitting rotation from the first to the second pair of link members so that rotation of the selected one link member effects simultaneous rotation of all the link members, wherein the motion transmitting means comprises two flexible cables extending between and attached to one of the link members in the first pair and one of the link members in the second pair.

4,321,785

WHEEL HEIGHT ADJUSTER

LaMont A. Kaland, Cedar Grove, Wis., assignor to Ataco Steel Products Co., Grafton, Wis.

Filed Dec. 8, 1980, Ser. No. 213,901
Int. Cl.³ A01D *53/08*
U.S. Cl. 56—17.2 **9 Claims**



1. A wheel height adjusting mechanism for attachment to the left or right side of a machine housing, comprising a base plate and a fan plate pivotally attached thereto about a pivot point, said fan plate being substantially flat and having a wheel journalled thereon, said fan plate further having an arcuate end, and also having a pluralityof spaced-apart detents adjacent said arcuate end, said base plate being substantially flat and having means for attaching said mechanism to said housing; a flat resilient spring handle non-rotatably attached to said base plate at one point and having thereon a finger selectively and releasably engageable with said detents, said base plate further having a fixed handle rigidly attached to said base plate and positioned alongside in cooperative relationship with said spring handle to permit lateral, disengaging movement of said finger away from said detents when said spring handle is urged toward said fixed handle, said fan plate being pivotable relative to said base plate upon grasping of said wheel when said finger is disengaged from said detents.

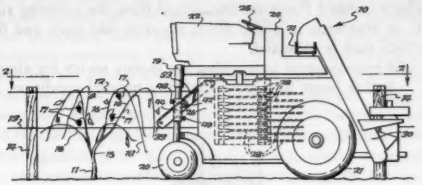
4,321,786

GRAPE HARVESTER WITH CANE LIFTER

Charles G. Burton, Lewiston, N.Y., assignor to Chisholm-Ryder Company, Inc., Niagara Falls, N.Y.

Division of Ser. No. 643,504, Dec. 22, 1975, Pat. No. 4,251,983, which is a continuation-in-part of Ser. No. 546,283, Feb. 3, 1975, abandoned. This application Jul. 7, 1980, Ser. No. 165,856
Int. Cl.³ A01D *46/00*
U.S. Cl. 56—330 **14 Claims**

1. A grape harvester for harvesting grapes from vines having cane thereon in shielding relationship to grape-bearing portions of said grapevines comprising a frame, harvesting means on said frame for harvesting grapes from said grape-bearing portions, cane lifter means mounted on said frame for lifting said cane out of the path of said harvesting means so that said cane is not engaged by said harvesting means, said cane lifter means comprising a cylinder having thread means thereon for lifting said cane, mounting means mounting said cylinder relative to said frame in advance of said harvesting means, and means for driving said cylinder to cause said thread means to produce motion in an upward direction so as to lift said cane,



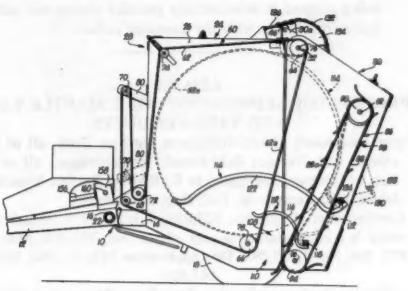
said mounting means including means for varying the inclination of said cylinder relative to a vertical plane.

4,321,787

METHOD AND APPARATUS FOR MAKING LARGE ROUND CROP BALES

Adin F. Holdeman, Hesston; Melvin V. Gaeddert, Newton; Howard J. Ratzlaff, Hesston; Martin E. Pruitt, Hesston, and Howard R. Lohrentz, Hesston, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Jun. 9, 1975, Ser. No. 584,870
Int. Cl.³ A01D *75/00*
U.S. Cl. 56—341 **24 Claims**



1. In a machine for making large round crop bales:

means for defining an off-the-ground, expandable bale-forming chamber operable to increase in volume as a diametrically growing bale is rolled therein during the introduction of additional crop material,

said chamber being provided with a bottom entrance thereto having a transverse dimension substantially less than the diameter of the chamber when fully expanded; and

means for lifting crop material from the ground as the machine passes over the same and for feeding such lifted material upwardly through said entrance and into the chamber to be added to the rolling bale retained above the entrance,

said chamber-defining means including a pair of flexible web stretches and overhead structure retaining said stretches in at least generally upright, mutually opposed relationship for movement in opposite vertical directions at the commencement of a bale-forming cycle.

4,321,788

OPEN END SPINNING APPARATUS

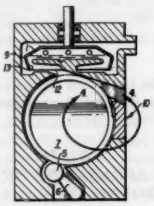
Otis B. Alston, Wetumpka, Ala., assignor to Dixie Yarns, Inc., Chattanooga, Tenn.

Filed Jan. 20, 1978, Ser. No. 871,142
Int. Cl.³ D01H *7/895*
U.S. Cl. 57—58.95 **14 Claims**

1. In an open-end spinning apparatus for manufacturing

textile yarns, of the type comprising a feed roller for feeding sliver to a combing roller which has projections protruding from the cylindrical surface thereof, and a cup-like turbine into which combed fibers are transferred from the combing roller on an airstream, in which fibers are spun into yarn, and from which yarn is collected,

the improvement comprising a combing sector for aligning textile fibers in a more mutually parallel condition, said



combing sector comprising a surface including a plurality of rows of projections capable of retarding the passage of textile fibers contiguous the projections on the cylindrical surface of the combing roller, said surface being arcuate and said projections spaced adjacent the projections on the cylindrical surface of the combing roller, said rows being aligned in substantially parallel planes and substantially concentric with the combing roller.

4,321,789

PROCESS FOR SPINNING OF CORE/MANTLE YARNS AND YARN PRODUCTS

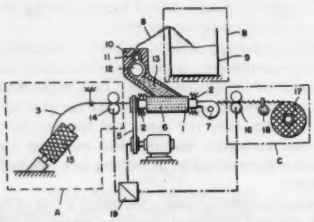
Peter Dammann; Heinz Schippers; Herbert Turk, all of Remscheid, and Herbert Schiminski, Hückeswagen, all of Fed. Rep. of Germany, assignors to BARMAG Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Continuation of Ser. No. 927,015, Jul. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 782,310, Mar. 28, 1977, Pat. No. 4,130,983. This application May 1, 1980, Ser. No. 145,822

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1976, 2613263; Jul. 25, 1977, 2733454

Int. Cl.³ D01H *1/12*; D02G *1/02, 3/36*

U.S. Cl. 57—224 **13 Claims**



1. In a process for the production of a core/mantle yarn, in which a core thread is continuously conducted in a straight line path through a spinning zone in a gap formed between two adjacent and oppositely moving surfaces, and in which staple fibers are fed into the straight line path of the core thread in such a way that the staple fibers come into frictional contact with the moving surfaces in said zone and are caused to be spun about the core thread, the improvement which comprises:

conducting the core thread at a first defined velocity into the spinning zone and drawing off said core thread during the spinning at a higher, second defined velocity in order to maintain a predetermined tension on the core thread in the spinning zone; and

roughening the surface of the core thread before the staple fibers are spun thereabout.

4,321,790

PROCESS FOR INCREASING THE CAPACITY AND/OR ENERGETIC EFFICIENCY OF PRESSURE-INTENSIFYING STATIONS OF HYDROCARBON PIPELINES

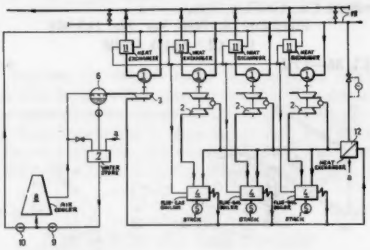
Zoltan Vadas; Zoltan Belcsak; Ernö Luptak, , assignors to Energiagazdalkodasi Intezet, Budapest, Hungary

Filed Oct. 30, 1979, Ser. No. 89,387

Claims priority, application Hungary, Oct. 31, 1978, EE2597

Int. Cl.³ F02C *3/22*

U.S. Cl. 60—39.02 **3 Claims**



1. A method of operating a pressure-intensifying station of a natural gas pipeline for increasing the capacity and energy efficiency thereof, said method comprising the steps of:

(a) producing by combustion a hot driving gas and propelling a gas turbine coupled with a machine for pressurizing the natural gas of said pipeline with said driving gas, thereby energetically depleting said driving gas and forming a flue gas therefrom;

(b) generating steam with said flue gas and propelling at least one steam turbine with the steam thus produced;

(c) driving a further machine for pressurizing said natural gas of said pipeline with said steam turbine;

(d) passing the natural gas after pressurization in said machines through at least one water-cooled heat exchanger; and

(e) circulating water in a closed path through an air cooler, said heat exchanger, a steam condenser connected to said steam turbine, and a boiler in which the steam is generated in step (b) whereby water is heated in said heat exchanger prior to being transformed to steam in said boiler by the heat of the depleted gas from said gas turbine.

4,321,791

ELECTRONIC FUEL CONTROL SYSTEM FOR A GAS TURBINE ENGINE

Robert J. Carroll, Plano, Tex., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 26, 1979, Ser. No. 106,778

Int. Cl.³ F02C *9/04*

U.S. Cl. 60—39.14 R **5 Claims**

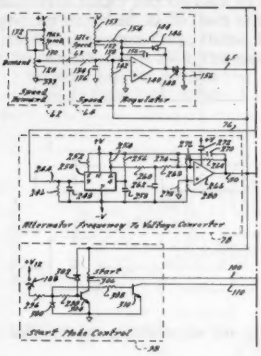
1. An Electronic Fuel Control System for Gas Turbine Engine of the type wherein fuel is supplied in response to a speed demand signal and in accordance with a predetermined fuel schedule; said fuel control system comprising:

a. start mode means operative to sequence said predetermined fuel schedule from a starting fuel schedule to a running fuel schedule when said turbine engine is accelerating from a low speed to a high speed during starting and further operative to prevent sequencing said predetermined fuel schedule from said running fuel schedule to

said starting fuel schedule upon deceleration of said gas turbine engine from a high speed to a low speed; and

b. Fuel boost means

i. held inoperative by said start mode means during said starting schedule, and



ii. operative during said running fuel schedule in response to an increased speed demand signal to transiently increase the amount of fuel supplied in excess of that called for by said predetermined fuel schedule where said transient increase overshoots that amount of fuel called for by said predetermined fuel schedule during acceleration of said engine.

4,321,792

DEVICE FOR PURIFYING THE EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE

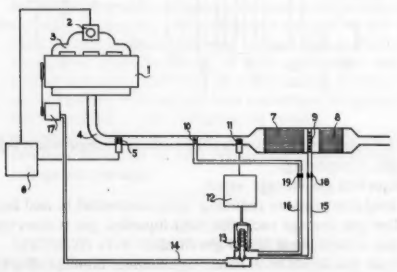
Michel Achard, La Garenne Colombes, France, assignor to Automobiles Peugeot and Societe Anonyme Automobiles Citroen, both of Paris, France

Filed Mar. 4, 1980, Ser. No. 127,067

Claims priority, application France, Mar. 8, 1979, 79 05934

Int. Cl.³ F01N *3/22*

U.S. Cl. 60—276 **1 Claim**



1. In a device for purifying the exhaust gases of an internal combustion engine having an exhaust line and a fuel supply device, comprising a first gas analyser within the exhaust line, first regulating means associated with the first gas analyser and the fuel supply device for maintaining constant the richness of the carburetted mixture supplied to the engine, a triple-function catalyst and an oxidation catalyst disposed in series within the exhaust line, the oxidation catalyst being downstream of the triple-function catalyst relative to the flow of the exhaust gases in the exhaust line, a first air injector within the exhaust line between the two catalysts, and control means associated with the first air injector; the improvement comprising a second air injector and a second gas analyser which is located downstream of the second air injector relative to the direction of flow of the exhaust gases within the exhaust line between the first analyser and the triple-function catalyst, second regulating means associated with the second analyser and the second injector for controlling the flow of air in the second injector so as to bring the composition of the exhaust gases to that which would correspond to a richness of the carburetted mixture between the stoichiometric composition and the richness regulated by the first regulating means which last-mentioned richness is regulated to be richer than the stoichiometric composition, and means for maintaining the flows through the first and second air injectors proportional to each other.

4,321,793

INTEGRATED HYDRAULIC CIRCUIT FOR OFF HIGHWAY WORK VEHICLES

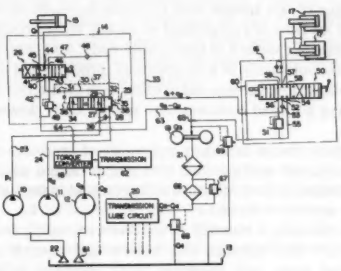
Kyoji Uranaka; Yasumasa Tarumizu, both of Kawasaki; Hideo Hara, Tokyo, and Masaaki Ichimura, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 26, 1979, Ser. No. 107,318

Claims priority, application Japan, Dec. 25, 1978, 53/158676; Dec. 28, 1978, 53/161091

Int. Cl.³ F01M *1/02*; F15B *13/06, 21/04*; F16D *33/02*

U.S. Cl. 60—358 **6 Claims**



1. An integrated hydraulic power system for off-highway self-propelled work machines, comprising:

(a) first pump means for providing pressurized fluid;

(b) steering actuator means;

(c) steering control valve means communicating between the first pump means and the steering actuator means for controlling the operation of the latter;

(d) the steering control valve means having means for diverting away from the steering actuator means any excess of the pressurized fluid from the first pump means that is not demanded by the steering actuator means;

(e) implement actuator means;

(f) implement control valve means communicating between the steering control valve means and the implement actuator means for controlling the operation of the latter by receiving the diverted pressurized fluid from the former, the implement control valve means being adapted to divert away from the implement actuator means any excess of the incoming pressurized fluid that is not demanded by the implement actuator means;

(g) second pump means for providing pressurized fluid;

(h) a hydraulic torque converter communicating with the second pump means for receiving the pressurized fluid therefrom;

(i) a retarder communicating with the implement control valve means and with the torque converter for being cooled with the pressurized fluid received therefrom; and

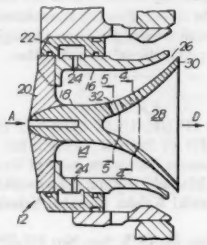
(j) a transmission lubricating circuit communicating with the retarder for receiving the pressurized fluid therefrom.

4,321,794

GAS TURBINE ENGINE FUEL BURNERS

Colin J. Etheridge, Coventry, England, assignor to Rolls-Royce Limited, London, England

Filed Mar. 12, 1980, Ser. No. 129,688
Claims priority, application United Kingdom, Mar. 20, 1979, 09839/79
Int. Cl.³ F02C 7/22
U.S. Cl. 60—743 4 Claims



1. A gas turbine engine fuel burner comprising:

an annular wall having an inner surface;

a central body supported coaxially within said annular wall and having an exterior surface spaced from the inner surface of said annular wall to define therewith an annular duct for flow of compressed air axially therethrough over the exterior surface of said central body, said central body flaring outwardly in a downstream direction and defining a hollow downstream end portion with an interior surface having a closed upstream end and an open downstream end;

fuel supply means including a plurality of apertures extending through said annular wall and arranged to cause a downstream flow of fuel in a film on said inner surface of said annular wall; and

means including a plurality of apertures extending from said annular duct through said hollow end portion of said central body, said apertures being arranged to bleed a portion of the flow of compressed air from the exterior surface of said central body and direct the same in a downstream direction over the interior surface of said hollow downstream end portion of said central body thereby preventing carbon accumulation on the interior surface of said hollow downstream end portion of said central body.

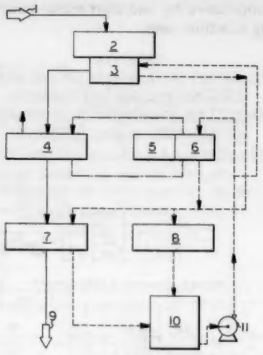
4,321,795

PROCESS FOR THE PURIFICATION OF GASEOUS CHLORINE

Helmut Brandt, Kaldehofweg 49, 4600 Dortmund 12; Helga U. Payer, Am Hang 1, 4600 Dortmund 30; Michael A. Payer, Am Hang 1, 4600 Dortmund 30, and Heike U. Payer, Am Hang 1, 4600 Dortmund 30, all of Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 189,677
Int. Cl.³ F17C 13/00
U.S. Cl. 62—54 3 Claims

1. In a process for the purification of gaseous chlorine by means of compression, liquefaction and re-evaporation, the improvement which comprises dissipating the heat of compression and liquefaction by transfer to a heat carrier which is inert to chlorine, and transferring heat from the hot heat carrier for



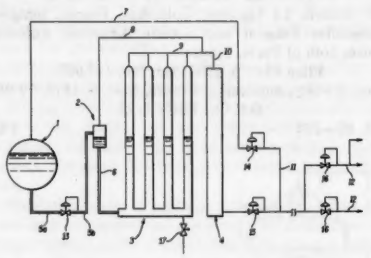
re-evaporating and superheating the liquefied purified chlorine.

4,321,796

APPARATUS FOR EVAPORATING ORDINARY TEMPERATURE LIQUEFIED GASES

Norihiko Kohno, Mitaka, Japan, assignor to Kobe Steel, Limited, Kobe, Japan

Filed Jun. 27, 1980, Ser. No. 163,577
Claims priority, application Japan, Jun. 28, 1979, 54/82209
Int. Cl.³ F17C 7/02
U.S. Cl. 62—52 4 Claims



1. An apparatus for evaporating ordinary temperature liquefied gas, comprising:

a liquefied gas storage vessel;

at least one pressure reducing valve connected to said liquefied gas storage such that said liquefied gas is converted into a two phase liquid-gas fluid;

at least one liquid level detecting chamber connected to said pressure reducing valve, wherein said two phase fluid is separated into a first liquid phase and a first gaseous phase;

at least one evaporating chamber wherein said liquefied gas comprises a second liquid phase and a second gaseous phase;

means for directly connecting said first liquid phase from said liquid level detecting chamber to a lower portion of said evaporating chamber;

means for directly connecting said first gaseous phase from said liquid level detecting chamber to a point downstream from said second liquid phase of said liquefied gas within said evaporating chamber; and

a flow control valve means associated with each said at least

one liquid level detecting chamber operative in response to said liquid level detecting means.

4,321,797

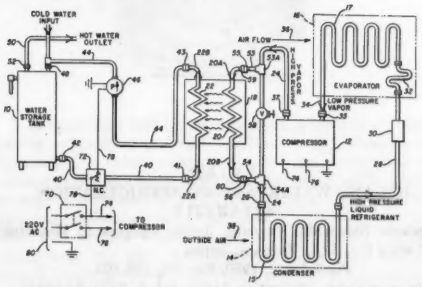
QUICK CONNECTOR AND SHUT-OFF VALVE ASSEMBLY FOR HEAT RECOVERY SYSTEM

Ronald J. Yaeger, and Gerald W. Keller, both of Dallas, Tex., assignors to Air & Refrigeration Corp., Dallas, Tex.

Division of Ser. No. 949,082, Oct. 6, 1978. This application Apr. 14, 1980, Ser. No. 139,998

Int. Cl.³ F25B *7/00, 27/02*

U.S. Cl. 62—79 **1 Claim**



1. A method of interconnecting a heat exchanger of a waste heat recovery system with a refrigeration system from which waste heat is to be recovered comprising the steps of:

providing a refrigeration system comprising a compressor, a condenser, and a conduit providing fluid communication between the outlet of said compressor and the inlet of said condenser, said conduit being precharged with a refrigerant, a heat exchanger comprising a refrigerant passage and a water passage mutually coupled in heat exchange relation, said refrigerant passage being precharged with refrigerant prior to initially interconnecting said heat exchanger with said refrigeration system, said refrigerant passage and said conduit including cooperating quick connect/disconnect couplings for interconnecting said heat exchanger with said refrigeration system;

initially operating said refrigeration system without said heat exchanger to enable refrigerant flow through said conduit;

removably connecting said refrigerant passage of said heat exchanger in parallel with said conduit and in fluid communication with the outlet of said compressor and the inlet of said condenser after an initial testing of said refrigeration system without said heat exchanger being mechanically coupled to said refrigeration system;

terminating the flow of refrigerant through said conduit for resultant diversion of said refrigerant flow through said refrigerant passage.

4,321,798

METHOD FOR HEATING WATER USED IN AN APPLIANCE CONNECTED INTO A DOMESTIC WATER CIRCUIT AND THE APPARATUS FOR CARRYING OUT SAID METHOD

Mario Palazzetti, Avigliana, and Giuseppe Cane, Sangano, both of Italy, assignors to Centro Ricerche Fiat S.p.A., Turin, Italy

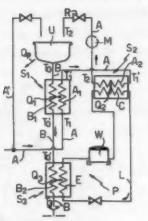
Filed Oct. 29, 1980, Ser. No. 201,996

Claims priority, application Italy, Oct. 30, 1979, 69117 A/79

Int. Cl.³ F25B *7/00, 27/02*

U.S. Cl. 62—79 **2 Claims**

1. A method for heating water used in an appliance connected into a domestic water circuit comprising a feed branch for continuously feeding hot water to said appliance and a discharge branch for discharging the water from the appliance, characterised by comprising a first stage in which a first quantity of heat withdrawn from the water passing through a first portion of said discharge branch is transferred to the water passing through a first portion of said feed branch, said first stage being carried out by means of a first heat exchanger traversed by the water of said feed and discharge branches, and a second stage in which a second quantity of heat given up by a fluid traversing the condenser of a heat pump is transferred to the water passing through a second portion of said feed branch which is downstream of said first portion, said second stage being carried out by means of a second heat exchanger traversed by the water of said feed branch and by said fluid, said second quantity of heat being partly supplied by the work of compression of a compressor of said heat pump, and partly by a further quantity of heat transmitted to the evaporator of said heat pump by the water passing through a second portion of said discharge branch, downstream of said first portion, the transfer of said further quantity of heat being carried out by means of a third heat exchanger traversed by the water of said discharge branch and by said fluid.



4,321,799

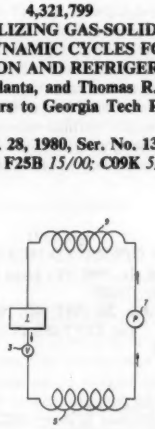
METHOD FOR UTILIZING GAS-SOLID DISPERSIONS IN THERMODYNAMIC CYCLES FOR POWER GENERATION AND REFRIGERATION

Robert A. Pierotti, Atlanta, and Thomas R. Rybolt, Decatur, both of Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Filed Mar. 28, 1980, Ser. No. 135,107

Int. Cl.³ F25B *15/00;* **C09K** *5/00*

U.S. Cl. 62—112 **9 Claims**



1. A method of transferring heat from a first body to a second body comprising:

absorbing heat from said first body by allowing a thermodynamic fluid comprising a dispersion of a particulate solid in a gas to expand;

transferring said expanded thermodynamic fluid to said second body; and

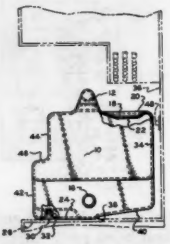
compressing said expanded thermodynamic fluid thereby releasing said heat into said second body, said gas-solid dispersion over the pressure and temperature ranges utilized exhibiting gas sorption on the dispersed solid at lower temperatures, higher pressures, or combinations thereof and desorption of said gas from the dispersed solid

at higher temperatures, lower pressures, or combinations thereof.

4,321,800
DEHUMIDIFIER STRUCTURE

Russell L. Gifford, Jr., Galesburg, Ill., assignor to Addison Products Company, Addison, Mich.

Continuation of Ser. No. 934,367, Aug. 17, 1978, abandoned.
This application Jul. 14, 1980, Ser. No. 168,136
Int. Cl.³ F25D *21/00*; H01H *35/00*
U.S. Cl. 62—150 **1 Claim**

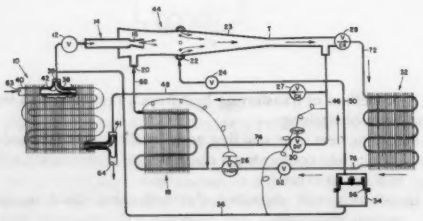


1. In combination with a dehumidifier structure having a condensate container support surface and a surface supporting a switch control, a portable and bodily removable from said support surface condensate container having a bottom resting on said support surface and having an interference fit therewith to locate said container with respect to said switch control, one edge of said bottom acting as a fulcrum about which said container may rock on said support surface, said container being shaped to locate the center of gravity of the container when empty to the stable side of said fulcrum with the condensate level in one range and to shift the center of gravity to the unstable side of said fulcrum with the level above said range whereby said container is rocked about said fulcrum relative to said switch control to activate the same, said dehumidifier structure and said container being of a configuration providing clearance for the bodily vertical movement of said container for engaging and disengaging said interference fit for the manual removal and installation of said container relative to said support surface.

4,321,801
JET OPERATED HEAT PUMP

Thomas H. Collard, Jr., 900 NE. Loop 410, Petroleum Center, San Antonio, Tex. 78209

Filed Jan. 26, 1981, Ser. No. 228,338
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.4 **11 Claims**

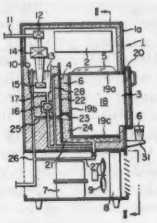


1. A jet pump heating and/or cooling system operating from waste heat that causes evaporation of a refrigerant comprising:
boiler means for receiving said waste heat to evaporate said refrigerant contained therein;
jet pump having a nozzle therein for discharging said refrigerant in a gaseous state therefrom at a high velocity, said discharge creating a vacuum;
evaporator means being connected to said jet pump and said vacuum therein, said vacuum drawing said refrigerant in a gaseous form from said evaporator means into said jet pump;
means for supplying said refrigerant in a liquid form to said jet pump to cause condensation of said gaseous form of said refrigerant inside said jet pump; and
subcooler means for receiving said condensate form of refrigerant to remove heat therefrom and subsequently flow to said evaporator means, said condensate being supplied to said boiler means separately from said subcooler means.

4,321,802
ICE AND WATER-MAKING REFRIGERATION APPARATUS

Shigetoshi Sakamoto, Toyoake, Japan, assignor to Hoshizaki Electric Co., Ltd., Toyoake, Japan

Filed Jul. 2, 1980, Ser. No. 165,402
Claims priority, application Japan, Jul. 5, 1979, 54-84443
Int. Cl.³ F25B *25/00*
U.S. Cl. 62—330 **4 Claims**

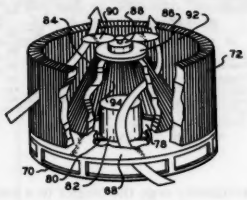


1. A refrigeration apparatus comprising
an ice-making unit for producing ice by supplying an ice-making surface with raw water circulated from a water tank for storing water used in the ice-making process;
a refrigeration portion constructed of plate members having a comparatively high thermal conductivity and arranged to form a refrigeration compartment whose front side is open, said refrigeration portion being disposed below the ice-making surface;
a pure water storage tank having a bottom and constructed of plate members surrounding back and side walls of said refrigeration portion and spaced apart therefrom by a prescribed distance; and
a casing provided with a bottom for accommodating said ice-making unit, said refrigeration portion and said pure water storage tank, said casing having an openable and closable door mounted to confront the open front side of said refrigeration compartment;
said ice-making unit producing ice which is allowed to fall onto the top of said refrigeration portion so that heat exchange between the fallen ice and said refrigeration portion causes at least a portion of the ice to thaw and cools said refrigeration compartment, the pure water which results from the thawing of the ice being permitted to flow into the pure water storage tank and being collected in said pure water storage tank while simultaneously cooling said refrigeration compartment.

4,321,803
MULTIPLE AIR PASSAGE CONDENSER

Hayden N. Smith, Jackson, Mich., assignor to Addison Products Company, Addison, Mich.

Filed Nov. 23, 1979, Ser. No. 96,899
Int. Cl.[3] F25B *39/04*
U.S. Cl. 62—507 13 Claims

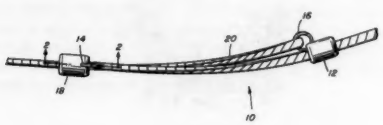


1. A condenser unit for air conditioning systems characterized by reduced cubic volume and high energy efficiency ratio comprising, in combination, a first annular closed loop heat exchanger coil having an outer side exposed to ambient air and an inner side defining a first chamber, a second annular closed loop heat exchanger coil within said first chamber having an inner side exposed to ambient air and an outer side communicating with said first chamber, said second coil defining a second chamber distinct from said first chamber, and a fan communicating with said first chamber inducing air flow through said first and second coils in opposed directions with respect to said inner and outer sides of said respective coils whereby ambient temperature air passes through each coil.

4,321,804
ADJUSTABLE NECKLACE OR BRACELET

Margaret Borofsky, 14 Greenway La., Greenfield, Mass. 01301, and Robert L. Borofsky, 22 Wilsondale St., Dover, Mass. 02030

Filed Sep. 2, 1980, Ser. No. 183,009
Int. Cl.[3] A44C *25/00*
U.S. Cl. 63—2 2 Claims



1. An adjustable, closed-loop, jewelry device, such as a necklace, bracelet or belt, which device comprises:

(a) a defined length of a metal chain element housing a substantially uniform cross section and having a one end and another end;

(b) first and second, generally cylindrical, housing elements, each housing element having a straight, generally tubular passageway therethrough and having aligned inlet and outlet passageway openings, the inlet and outlet openings larger than the cross section of the chain element;

(c) ring-like means to secure the one end of the chain element to the second housing element, the chain element passing through the passageway of the first housing element;

(d) ring-like means to secure the other end of the chain element to the first housing element, the chain element passing through the passageway of the second housing element;

(e) first and second sleeve insert means positioned respectively within the first and second housing elements, the insert means having straight, generally tubular passageways therethrough defining inlet and outlet openings and composed of a frictionally engaging, synthetic, elastomeric material, the inlet and outlet openings thereof being smaller than and aligned with the respective inlet and outlet passageways of the housing elements, the insert means retained within the housing elements by radially downwardly extending lip elements at each end of the housing elements, which lip elements define the inlet and outlet passageways of said housing elements, and the interior surface of the tubular passageways in a generally uniformly and snugly fitted relationship about and with the exterior surface of the chain element passing therethrough, so as to permit the chain element to be engaged in a slidable, snug, friction manner in each tubular passageway substantially along the full length and about the exterior surface of the chain element within each insert passageway, to secure the chain element in position after adjustment;

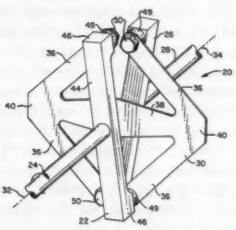
(f) said ring-like means being secured at the mututally adjacent ends of the respective ones of said housing elements adjacent said passageway openings to provide means whereby, when said housing elements are unrestrained an opposed pull is exerted on said chain in a manner to increase its circumference, the direction of said pull is generally aligned with the direction of said passageways; and

(g) the difference in size between the housing element openings and the cross section of the chain element providing means to allow relative movement of the chain element therethrough without abrasive contact therebetween.

4,321,805
ROTARY DRIVE FLEXIBLE COUPLING

Robert B. Bossler, Jr., Bloomfield, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Jun. 1, 1979, Ser. No. 44,481
Int. Cl.[3] F16D *3/54*
U.S. Cl. 64—19 15 Claims



1. A flexible coupling comprising a driving member rotatable about a first axis, a driven member rotatable about a second axis generally colinear with said first axis, and a flex member located substantially in a plane generally perpendicular to said first and second axes, said flex member consisting of four arms and one connecting piece, two of said arms being arranged to form a first V and having their adjacent ends rigidly fixed to one another at the vertex of said first V, the other two of said arms being arranged to form a second V and having their adjacent ends rigidly fixed to one another at the vertex of said second V, said two Vs being arranged so that their interior angles generally face one another, and said connecting piece extending between said two vertices of said two Vs and being rigidly fixed at each of its ends to the adjacent one of said two vertices whereby the free end portions of said arms are movable relative to one another only by bending of said flex member, means fixing said driving member to the free end portion of one of said arms of said first V and to the free end portion of one of said arms of said second V, said two free arm end portions to which said driving member is fixed being located on opposite sides of said connecting piece, and means fixing said driven member to the free end portions of the remaining two of said arms, said four arms being made of such material

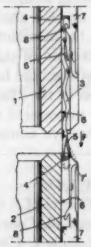
and being of such cross-sectional shape so as to be relatively flexible with regard to movement of their free end portions out of said plane and as to be relatively rigid with regard to movement of their free end portions in said plane.

4,321,806

METHOD AND APPARATUS FOR OPENING THE LATCH OF THE NEEDLES IN DOUBLE-CYLINDER KNITTING MACHINES

Martino Masini, Via Sandrini 14, Quinzano d'Oglio (Brescia), Italy

Filed Jun. 27, 1980, Ser. No. 163,904
Claims priority, application Italy, Nov. 7, 1979, 5193 A/79
Int. Cl.³ D04B *9/10, 15/08, 15/10*
U.S. Cl. 66—14 **7 Claims**



1. A double-cylinder knitting machine having a plurality of grooves on each cylinder thereof, each groove being defined by two opposed side walls and a bottom wall and including an entrance for receiving a needle, the knitting machine further including means for opening the latches of the respective two-beak needles during the transfer thereof from one cylinder to the other by means of sliders, characterized by having on the two opposed sides of each groove (6) for guiding a needle and a slider, and adjoining the bottom wall (6'), two recesses (9) opposed to each other and defining a chamber (10) for sliding of the needle; and further characterized by having the surfaces (12) of said sides that are radially outward of the axes of the cylinders defining a sliding seat for the slider; and further characterized in that toward the entrance of said groove said surfaces form two corner edges (12') on which rests the latch of the needle for its own opening during the displacement of the needle toward the interior of the said groove.

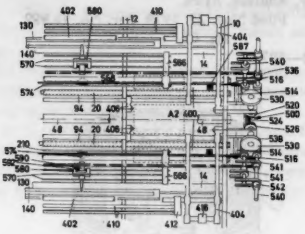
4,321,807

DRAW MECHANISM FOR STRAIGHT BAR KNITTING MACHINES

Barry C. Strong, Syston, England, assignor to William Cotton Limited, England

Continuation of Ser. No. 107,255, Dec. 26, 1979, abandoned.
This application Feb. 27, 1981, Ser. No. 239,132
Claims priority, application United Kingdom, Dec. 29, 1978, 50244/78
Int. Cl.³ D04B *15/52*
U.S. Cl. 66—126 R **8 Claims**

1. A draw mechanism for a straight bar knitting machine having a positively driven slurcock and yarn carrier, comprising a fixed guide rod for the yarn carrier, a belt for pulling the yarn carrier in each direction of traverse, a drive member secured to said belt and slidable on the guide rod for reciprocating the yarn carrier with respect to the guide rod, and resilient means interposed between the drive member and the



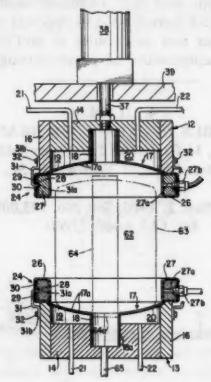
yarn carrier to resiliently urge the carrier to a normal position with respect to the drive member.

4,321,808

APPARATUS FOR TREATMENT OF YARN IN PACKAGE FORM

Donald R. Hull, Wilmington, Del., assignor to Glen Head Inc., Canton, Ga.

Filed Apr. 16, 1980, Ser. No. 140,896
Int. Cl.³ D06B *5/18, 23/04*
U.S. Cl. 68—43 **6 Claims**



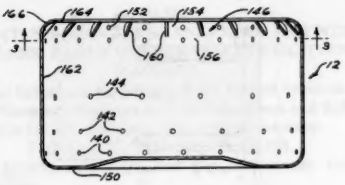
1. In an apparatus for treating a yarn package with a yarn treating agent, said package consisting of multiple strands of yarn wound laterally upon a core into the form of a body of rotation, having radially extending ends and generally axially extending sides, comprising means for encapsulating end portions of said package, means in said encapsulating means to contact said package uniformly across the opposite ends of said package, said contacting means defining openings for admission of fluid into said package, means for moving at least part of said encapsulating means axially toward the center of said package to compress the package to a predetermined density, means for introducing a measured quantity of a yarn treating agent under pressure into said encapsulating means and through preselected ones of said openings into said package and means for introducing a diffusing fluid into said preselected openings to further diffuse said yarn treating agent throughout at least portions of said packge, the improvement comprising

(a) an inflatable annular skirt, mounted for cooperation with said encapsulating means,

(b) said skirt, when inflated, expanding radially inward to conform to the sides of said yarn package whereby radial

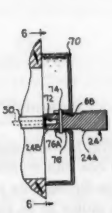
sealing pressure about the sides inhibits egress of said yarn treating agent from the sides of said package.

4,321,809
WASHING MACHINE
John Bochan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Sep. 4, 1980, Ser. No. 183,864
Int. Cl.³ D06F *39/08*
U.S. Cl. 68—207 **16 Claims**



1. A fabric washing appliance comprising: a tub; a fabric receiving basket; recirculating means arranged to deliver liquid from said tub to said basket; and liquid supply means for delivering liquid to said basket; said basket having formed therein a plurality of individual vertically spaced flow means, each one of said flow means being constructed and arranged to permit liquid flow from said basket to said tub through said one of said flow means at a predetermined unimpeded flow rate when the level of fabrics in said basket is lower than said one flow means and to permit liquid flow through said one of said flow means at a lower, impeded flow rate when the level of fabrics in said basket is above said one of said flow means, the unimpeded flow rate through said one of said flow means, in combination with the cumulative impeded flow rate of any flow means lower than said one of said flow means, providing a total flow rate from said basket to said tub at least equal to the rate of flow of liquid into said basket from said liquid supply means and said recirculating means, the cumulative impeded flow rate through all of said flow means providing a total flow rate from said basket to said tub which is less than the flow rate of said recirculating means thereby stabilizing the liquid level in said basket at approximately the level of the lowermost flow means through which flow is unimpeded by the fabric in said basket, whereby the liquid level in the basket is automatically determined by the level of fabric in said basket.

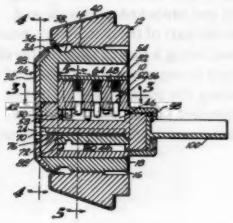
4,321,810
LOCK MECHANISM OF THE SINGLE CYLINDER DEADBOLT TYPE
Carl H. Wildenradt, 2358 35th Ave., San Francisco, Calif. 94116
Filed Feb. 4, 1980, Ser. No. 118,492
Int. Cl.³ E05B *65/06*
U.S. Cl. 70—129 **11 Claims**



1. In a lock mechanism of the type which includes a cylinder lock positionable at one side of a door in a axially fixed relationship with the door, a rotatable thumbturn positionable at the other side of the door opposite said cylinder lock, and a latchbolt operated between extended and retracted positions by operation of said cylinder lock and said thumbturn, the improvement comprising

means for mounting said thumbturn for axial movement between operative and inoperative positions wherein said thumbturn is operatively coupled to said latch bolt for operation of the latch bolt in the operative axial position thereof and is operatively uncoupled from said latch bolt and prevented from rotation in the inoperative axial position thereof.

4,321,811
LOCKING MECHANISM
Kurt Ziegler, Miami, Fla., assignor to Ursula E. Ziegler; Ingrid Merritt; Donald E. Burg, all of Miami and Robert J. Van Der Wall, Coconut Grove, all of Fla.; a part interest
Filed Feb. 5, 1981, Ser. No. 231,748
Int. Cl.³ E05B *17/14, 19/06, 27/04*
U.S. Cl. 70—356 **9 Claims**



1. A locking mechanism for use with locks having an outer cylinder with a pin box and bolt actuating linkage, comprising:

a housing means for fixed attachment to an object to be locked, and including a face plate fixed to the housing with a fixed slot through, the face plate in angular disorientation to the pin box;

an inner cylinder rotatably mounted in a concentric relationship within the outer cylinder including a key slot therein and having a pin bar substantially adjacent and parallel to a plane of the key slot, said pin bar having a plurality of reversely biased transverse grooves forming inclined planes of random height;

a plurality of side-by-side rows of movable resiliently urged pins of predetermined lengths in the same profile as the random height of the grooves of the pin bar and disposed in staggered relation to each other in the pin box, including means to retain the pins therein; and

a means connecting the inner cylinder to the bolt actuating linkage.

4,321,812
PADDLE LOCK WITH PIVOTALLY MOUNTED HANDLE DISCONNECT MEMBER
Albert L. Pelcin, Aurora, Ohio, assignor to The Eastern Company, Cleveland, Ohio
Filed Dec. 28, 1979, Ser. No. 108,010
Int. Cl.³ E05B *55/04*; E05C *1/14*
U.S. Cl. 70—472 **38 Claims**

1. A door lock, comprising:

(a) a body structure;

(b) a bolt structure connected to the body structure for movement between latching and unlatching positions, the bolt structure having a connecting formation connected thereto for movement along a first path of travel relative to the body structure in response to movement of the bolt structure between its latching and unlatching positions;

(c) a handle structure connected to the body structure for movement between normal and operating positions, the handle structure having an operating formation connected thereto for movement along a second path of travel relative

to the body structure in response to movement of the handle structure between its normal and operating positions;

(d) key control means connected to a selected one of the structures and having a locking member which is movable relative to the selected structure between locked and unlocked positions, the key control means being operable to selectively retain the locking member in its locked and unlocked positions;

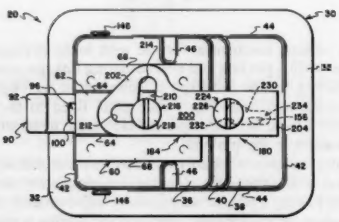
(e) disconnect means interposed between the operating formation and the connecting formation for selectively drivingly connecting and disconnecting the operating and connecting formations to thereby selectively drivingly connect and disconnect the handle and bolt structures, the disconnect means including mounting means connecting at least a part of the disconnect means to a given one of the structures other than the selected structure for movement:

(i) along a third path of travel relative to the given structure between connecting and disconnecting positions in response to movement of the locking member between its locked and unlocked positions; and,

(ii) when the part of the disconnect means is in its connecting position, along a fourth path of travel relative to the body structure in response to movement of the operating formation along the second path of travel;

(f) the disconnect means being operable:

(i) when the part of the disconnect means is in its connecting



position, to drivingly connect the handle and bolt structures such that, when the handle structure is moved to its operating position, the bolt structure is caused to move to its unlatching position; and,

(ii) when the part of the disconnect means is in its disconnecting position, to provide no driving connection between the handle and bolt structures, whereby the handle structure may be moved freely between its normal and operating positions without causing corresponding movement of the bolt structure;

(g) the mounting means being operable to pivotally mount the part of the disconnect means for movement along the third path of travel relative to the given structure about a pivot axis, whereby the third path of travel is caused to take the form of an arc having the pivot axis as its center of radius;

(h) the bolt structure having a projection formed thereon;

(i) the disconnect means part having an L-shaped slot formed therein with one leg of the slots being with the first path of travel when the part is in its disconnecting position, and with the other leg of the slot extending laterally with respect to the one leg; and,

(j) the bolt structure projection extending into the L-shaped slot for sliding movement along the first leg when the handle structure is moved while the other of the interconnected members is in its disconnecting position, and for drivingly engaging a side of the second leg when the other of the interconnected members is in its connecting position.

4,321,813

PUSHER BLOCK FOR ROTARY FORGING MACHINES AND METHOD OF USING SAME

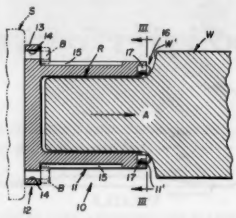
Bruce N. Hershock, Lancaster, Pa., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00016, § 371 Date Jan. 7, 1980, § 102(e) Date Jan. 7, 1980

PCT Filed Jan. 7, 1980, Ser. No. 127,998

Int. Cl.³ B21J *13/12*

U.S. Cl. 72—76 **9 Claims**



1. A pusher block (10) for rotary forging machines comprising

a tubular portion (11),

attachment means (12), adjacent a first end of said tubular portion, for detachably securing said pusher block to a rotating spindle (S) of a rotary forging machine, and

gripping means (16), fixedly secured on a second end of said tubular portion, for moving a workpiece (W) axially and for simultaneously frictionally gripping the periphery of said workpiece and rotating said workpiece upon rotation of said spindle to prevent relative rotation between said pusher block and said workpiece.

4,321,814

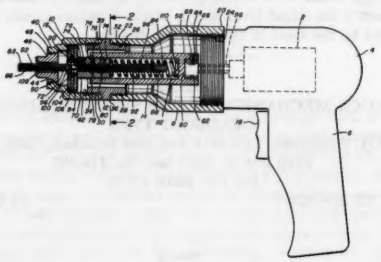
HAND TOOL FOR SETTING THREADED FASTENERS

Alan Martin, 42 Lantern La., Sharon, Mass. 02067

Filed Jul. 25, 1980, Ser. No. 172,274

Int. Cl.³ B21J *15/34*

U.S. Cl. 72—114 **6 Claims**



1. A power hand tool for setting internally threaded rivets comprising

a generally cylindrical housing and a motor mounted in the housing adjacent one end thereof,

a spindle disposed in the housing adjacent to the motor and connected to the motor to be rotated by it,

an axially extending chamber of non-circular cross section in the spindle open at the spindle end away from the motor,

a mandrel driver mounted in the chamber and having a cross section complimentary to the chamber so that the driver will rotate with the spindle,

a mandrel secured to and extending axially from the driver

to be rotated by said driver, said mandrel being threaded at its end away from the driver,

an anvil secured to the end of the housing away from the motor and having a central opening through which the mandrel extends,

a spring disposed in the chamber behind the driver for yieldably urging the mandrel in the direction of the anvil and acting as a shock absorber to allow the mandrel to move rearwardly toward the motor,

and said motor connecting said spindle for stopping, starting and reversing its direction of rotation.

4,321,815

APPARATUS FOR INTERCHANGEABLE MOUNTING OF ROLLERS, PARTICULARLY IN A STRAIGHTENING MACHINE

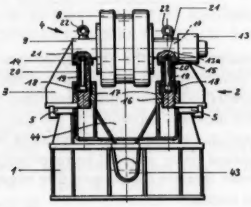
Karl-Heinz Ecker, and Karl-Heinz Wahl, both of Erkelenz, Fed. Rep. of Germany, assignors to Wirth Maschinen-und Bohrgerate-Fabrik GmbH, Erkelenz, Fed. Rep. of Germany

Filed Oct. 12, 1979, Ser. No. 84,388

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1978, 2845506

Int. Cl.³ B21D *3/02;* B21B *31/12*

U.S. Cl. 72—160 **21 Claims**



1. Apparatus for the interchangable mounting of rollers, comprising:

at least one roller unit, each unit including a roller having opposing end members and an axis of rotation coincident therewith;

a frame for holding said roller unit including a base and opposing arms, each arm including upwardly directed means for snugly receiving said end members; and

means disposed within said arms and acting upwardly against said end members, for moving said end members between a raised interchange position and a lowered operative position within said receiving means,

said moving means contacting undersides of said end members and defining therewith means for aligning said roller unit with said receiving means when said end members are in the raised position so that when said end members are moved to the lowered position, they fit snugly within said receiving means.

4,321,816

METAL TUBE AND APPARATUS AND METHOD FOR MANUFACTURING THE SAME

Yoshihiko Nakahara, Abiko; Norihiro Tsujii, Atami; Kenichi Nakanishi, Minami-ashigara; Yuji Sakai, Nakai, and Masanori Saigo, Tokyo, all of Japan, assignors to Kyodo Insatsu Kabushiki Kaisha and Lion Kabushiki Kaisha, both of, Japan

Filed Aug. 6, 1979, Ser. No. 63,985

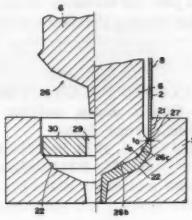
Claims priority, application Japan, Aug. 8, 1978, 53-96312

Int. Cl.³ B21C *23/18, 23/20, 25/02*

U.S. Cl. 72—267 **5 Claims**

1. Single impact extrusion apparatus for manufacturing a thin-walled metal tube having seamless sides including a tubular nipple section having an opening, a shoulder section joined to said nipple section, a tubular barrel section and a border section connecting said shoulder section and said tubular barrel section, wherein said sections form a continuous wall of a metallic material and define an interior space for storing contents therein, said tubular barrel section being defined by a wall which is seamless in the axial direction thereof and having a wall thickness ranging between about 20 microns and about 70 microns, comprising:

a punch including a main shank having a longitudinally extending central punch axis, a punch head and an extruding corner formed between said main shank and said punch head, said punch head having a first head surface and a second head surface and wherein said second head surface of said punch head at said extruding corner has a tapered form in a cross section including said punch axis thereby forming a tapered surface which is inclined with respect to the axis of said punch in the range of between 140° and 160°, said extruding corner having the largest diameter of said punch;



a die provided with a recess or cavity having a side surface, said die being arranged to receive said punch in the cavity thereof in single impact extrusion apparatus, and wherein a clearance is provided between said side surface and said extruding corner such that a wall thickness of between about 20 microns and about 70 microns is obtained, said die having a first bottom surface for forming said shoulder section and said border section of said tube, said first bottom surface including a first tapered portion which is inclined with respect to said punch axis at an angle in the range of between 140° and 160° for forming said border section and a second tapered portion for forming said shoulder section, and a second bottom surface for forming said nipple section of said tube;

and wherein upon the punch reaching the end of its stroke wherein it is located within the die recess, the distance between said first and second head surfaces of said punch head and said first bottom surface of said die is greater than the distance between said extruding corner of said punch and said side surface of said die.

4,321,817

SHEET BENDING BRAKE

Henry C. Barnack, W. Springfield, Mass., assignor to Tapco Products Company, Inc., Detroit, Mich.

Filed Mar. 17, 1980, Ser. No. 130,988

Int. Cl.³ B21D *5/04, 11/04*

U.S. Cl. 72—319 **7 Claims**

1. A sheet bending brake comprising

a frame having a fixed jaw and a movable jaw,

an anvil member secured to said fixed jaw,

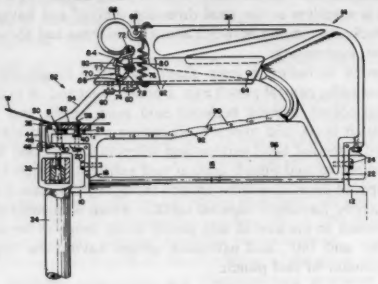
said movable jaw having a clamping surface movable between workpiece clamping and non-clamping positions relative to the anvil member,

means for releasably locking the movable jaw in workpiece clamping position,

a bending member hingedly connected to the fixed jaw,

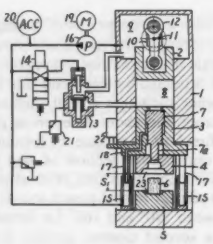
and a one piece, hollow, oval-shaped solid body having opposed ends and opposed walls with said ends being located on the major axis extending through the oval-

shaped body, said body being pivoted at one end to said movable jaw and at the other end to said means releasably



locking said jaw and including means extending between said walls for varying the distance between said walls.

4,321,818
CLOSED FORGING PRESS
Michio Bessho, Himeji, Japan, assignor to Kawaski Yukon Kabushiki Kaisha, Hyogo, Japan
Filed Oct. 3, 1979, Ser. No. 81,364
Int. Cl.³ B21J *9/12*
U.S. Cl. 72—453.02 **1 Claim**

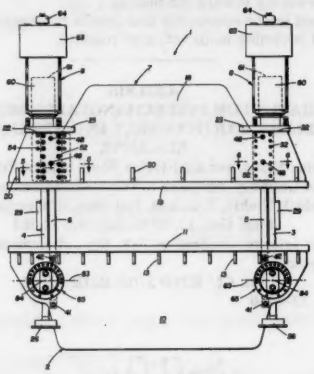


1. In a hydraulic forging press having at least one press ram actuated reciprocatively through working oil by reciprocating motion of a pump ram given by mechanical driving means, a closed forging press being provided with at least one punch ram disposed in a position to communize said working oil with said press ram and perform double action with said press ram, and actuated through said working oil by reciprocating motion of said pump ram,

said press ram and said punch ram being actuated in common by said working oil in the relation that said press ram and said punch ram communize said working oil in the state that said working oil is kept sealed in a cavity provided between said pump ram and said press ram and said punch ram during actuating of said working oil on the pressure areas of said punch ram and said press ram so that said working oil of said state continues to actuate said punch ram after finishing of the working of said press ram,

said hydraulic forging press including a cylinder, said pump ram being reciprocatively mounted in one end of said cylinder and said press ram and said punch ram being reciprocatively mounted in the other end of said cylinder, with space between said pump ram and said press and punch rams filled with working oil and forming said cavity, and said punch ram being reciprocatively mounted in said press ram with one end open to said cavity whereby the working oil in said cavity is in working communication with said punch ram.

4,321,819
PRESS CONSTRUCTION
Derald H. Kraft, and William S. Wagner, both of Canton, Ohio, assignors to Dyneer Corporation, Canton, Ohio
Filed Jul. 23, 1980, Ser. No. 190,093
Int. Cl.³ B21J *13/04*
U.S. Cl. 72—456 **19 Claims**



1. A press construction of the gap-framed type including:

(a) a bed for mounting first die means thereon;

(b) a pair of spaced side frame means exending from the bed;

(c) slide means movably mounted on the side frame means for reciprocal movement toward and away from the bed, said slide means being adapted to receivably mount second die means thereon for cooperative engagement with the first die means;

(d) drive means engaged with the slide means for reciprocally moving the slide means on the side frame means to perform work on a workpiece located between the first and second die means; and

(e) spherical bearing means operatively connecting the side frame means with the bed, enabling the side frame means and bed to rotate about an axis of the spherical bearing means which extends parallel to the bed and perpendicularly to the side frame means to maintain the first and second die means in parallelism when the bed and side frame means are subjected to elastic bending and deformation forces during a press operation.

4,321,820
PIPE-BENDING TOOL
Bruce F. Nason, 20620 Crawford Rd., Lynnwood, Wash. 98036
Filed Sep. 22, 1980, Ser. No. 189,775
Int. Cl.³ B21D *7/02*
U.S. Cl. 72—459 **10 Claims**

1. A pipe-bending tool comprising:

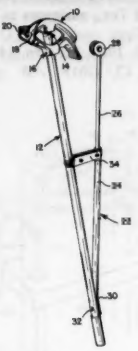
a pipe-bending head having a curved bending channel adapted to receive a length of pipe and anchor means positioned at one end of the bending channel to releasably secure the pipe to the channel while the remainder of the pipe is bent along the channel;

an elongated handle having a means to secure the pipe-bending head at one end thereof;

a gauge arm projecting from a location on the handle spaced apart from the bending head; and

a stop member secured to the projecting end of the gauge arm, the gauge arm extending along the handle at an acute angle from the handle to position the stop member along the longitudinal axis of the bending channel adjacent the end of said channel opposite the anchor means so that the

bending of the pipe toward the handle is terminated by engagement with the stop means at a predetermined location, thereby terminating the bending of the pipe at a predetermined angle.

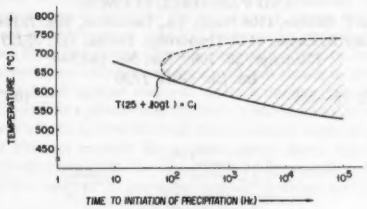


4,321,821

METHOD OF ESTIMATING THE RESIDUAL LIFE OF HEAT RESISTANT PARTS MADE OF 12% Cr STEEL STEELS

Shuichi Komatsu, Yokohama; Masako Nakahashi, Kawasaki; Hiromitsu Takeda, Yokosuka, and Masayuki Yamada, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 3, 1980, Ser. No. 109,313
Claims priority, application Japan, Jan. 31, 1979, 54/9121
Int. Cl.³ G01N *25/00*
U.S. Cl. 73—15 R **4 Claims**



2. A method of measuring the deterioration degree of heat resistant parts made of a 12% Cr steel containing at least one of Mo and W and used under high temperatures, comprising the steps of:

measuring the amount of Laves phase precipitated within the 12% Cr steel actually used under high temperatures;

obtaining the heating time of the 12% Cr steel under an accelerated temperature, said heating time giving rise to precipitation of Laves phase in the same amount as measured in the preceding step, from a deterioraton criterion curve representing the relationship between the heating time of the steel under the accelerated temperature and the amount of Laves phase precipitated during said heating time; and

converting the heating time under the accelerated temperature to the heating time under the actual operation temperature of the parts by using the following formula for the precipitation behavior of Laves phase:

$$T(c+\log t)=C$$

where,

T is an absolute temperature,

t is a heating time,

c is a constant of 25 inherent in the steel material, and

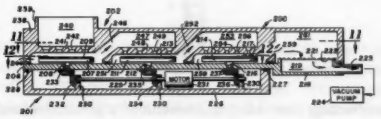
C is a constant determined by the precipitated amount of Laves phase.

4,321,822

IMPACTOR APPARATUS

Virgil A. Marple, Maple Plain, and Benjamin Y. H. Liu, North Oaks, both of Minn., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed Jun. 5, 1980, Ser. No. 156,667
Int. Cl.³ G01N *15/02*
U.S. Cl. 73—28 **38 Claims**



1. An impactor apparatus for collecting particles entrained in a gas comprising: particle collecting means, base means having means for supporting said particle collecting means, a nozzle assembly mounted on the base means, means releasably connecting the nozzle assembly to the base means allowing the base means to be removed from the nozzle assembly; said base means when removed from the nozzle assembly being adapted to accommodate a cover to enclose the particle collecting means, said nozzle assembly and base means having an enclosed chamber means open to the means for supporting said particle collecting means, said nozzle assembly including nozzle means having at least one orifice with an inlet open to a source of gas and particles and an outlet opened to the chamber means to direct gas and particles toward the particle collecting means, and a gas outlet means opened to the chamber adapted to be connected to means for drawing gas from the chamber whereby gas and particles are moved from the source of gas and particles through the orifice through the chamber, said particles being directed toward the particle collecting means where some of the particles are collected, said means for supporting said particle collecting means including a rotatable table, and means rotatably mounting the table for rotation about an axis extended generally parallel to a longitudinal axis of an orifice of a nozzle means, and means for rotating the table.

4,321,823

AQUATIC SEDIMENT AND CURRENT MONITOR

Roger Y. Anderson, 3201 Campus Blvd., NE., Albuquerque, N. Mex. 87106

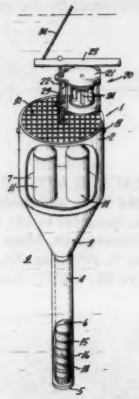
Filed Jun. 11, 1980, Ser. No. 158,507
Int. Cl.³ G01N *1/20*
U.S. Cl. 73—61.4 **11 Claims**

1. An aquatic sediment and current monitor adapted to be positioned in a body of water comprising:

an elongate, vertically alignable, collecting tube having an open upper end and a closed lower end for accumulating aquatic sediment;

means for measuring currents in said body of water; and

means responsive to said measuring means for automatically marking the quantity of sediment accumulated in said



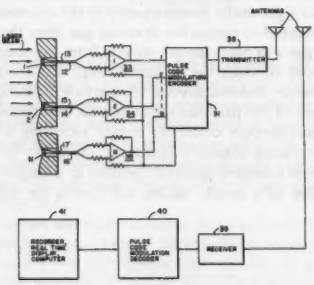
collecting tube after movement of a predetermined current flow past said monitor.

4,321,824

HIGH ENERGY LASER TARGET BOARD

Robert C. Martin, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 21, 1980, Ser. No. 170,330
Int. Cl.³ G01S *5/12*
U.S. Cl. 73—190 EW **3 Claims**



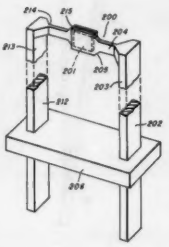
1. A device for sensing high electromagnetic energy radiation comprising a board having a plurality of individual sensing elements therein; said sensing element and said board are fabricated as an integral part of a single metal plate; said elements producing heat in response to said radiation striking it; said board acting as a heat sink for the edges of said elements such that the heat will flow from the center of the element to its edges in proportion to the intensity of the radiation; a plurality of thermocouples each having a pair of junctions; one junction connected to the center of each element and the other junction connected at the edge of the element so as to produce a voltage which is proportional to the heat flowing in said elements; and measurement means connected to each of said thermocouple junctions.

4,321,825

CONVECTIVE COOLING RATE SENSOR

Roy W. Tarpley, Garland; Larry A. Rehn, Rowlett, and Paul H. Davis, Seagoville, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 5, 1980, Ser. No. 146,993
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 **8 Claims**



1. A convective cooling rate sensor comprising:

a silicon chip bulk resistor element having an impurity concentration sufficient to cause a positive temperature coefficient of resistance throughout a predetermined range of temperatures; and

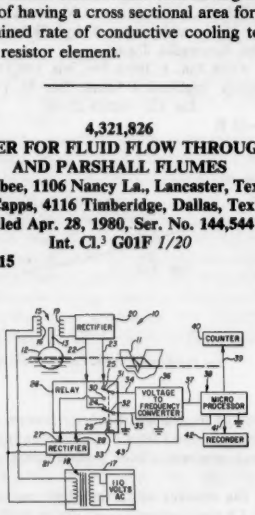
a pair of electrodes each in ohmic contact with the silicon chip bulk resistor element and each having at least a portion thereof having a cross sectional area for providing a predetermined rate of conductive cooling to the silicon chip bulk resistor element.

4,321,826

FLOWMETER FOR FLUID FLOW THROUGH WEIRS AND PARSHALL FLUMES

William C. Bibbee, 1106 Nancy La., Lancaster, Tex. 75134, and Stanley B. Capps, 4116 Timberidge, Dallas, Tex. 75227

Filed Apr. 28, 1980, Ser. No. 144,544
Int. Cl.³ G01F *1/20*
U.S. Cl. 73—215 **10 Claims**

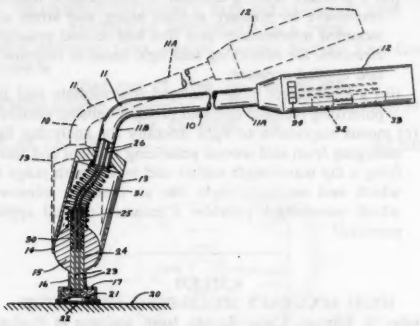


1. A flowmeter for fluid flow through weirs and parshall flumes including: float means; a double wound coil including a primary coil and a secondary coil; AC power supply connection means for said primary coil; AC rectifier means connected to said secondary coil means, metalic coil core means mounted on said float means positioned for movement into and out of said double wound coil by degree with floating height variation movement of said float means; voltage-to-frequency converter means; circuit connective means interconnecting said AC rectifier means and said voltage-to-frequency converter means; and a microprocessor structure with memory means connected to receive an output from said voltage-to-frequency converter means, and connected for providing linearized outputs.

4,321,827
SELF ALIGNING SURFACE TEMPERATURE SENSOR

Harry V. Anderson, Minneapolis, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Mar. 31, 1980, Ser. No. 135,334
Int. Cl.³ G01K 1/16, 7/22
U.S. Cl. 73—343 R 5 Claims



1. A sensor assembly adapted to be placed against an object surface for measuring a parameter relating to the object surface comprising a parameter sensor element having an outer surface that is generally planar, the sensor element being adapted to measure the parameter from the object surface when the sensor surface is contiguous with the object surface, an elongated support having first and second ends, the first end being remote from the sensor element and being adapted to be hand held, and coupling means between said sensor element and the second end of said elongated support comprising a universal swivel coupling permitting the sensor element to swivel relative to said elongated support at least a limited number of degrees, said swivel coupling comprising a ball member mounted on the sensor element, a housing mounted on said elongated support adjacent the second end, means forming a ball seat in said housing, said ball being on an opposite side of the seat from the sensor element and seating against said seat for universal swiveling movement, and bias means to normally retain said ball against said seat under a predetermined force and controllably permitting the ball to move away from said seat when force exerted through said elongated support on said sensor element exceeds the predetermined force, and means operatively coupled to the sensor element to provide an indication of the value of the parameter sensed by the sensor element.

4,321,828
RADIANT HEAT COLLECTOR-SENSOR TEMPERATURE CONTROL SYSTEM

Steven D. Grimes, and Thomas J. Mihalcik, both of Sulphur, La., assignors to Conoco Inc., Ponca City, Okla.

Filed Jan. 14, 1980, Ser. No. 111,574
Int. Cl.³ G01K 13/08
U.S. Cl. 73—351 1 Claim

1. A device for use in controlling the temperature of a rotating cylindrical drum, the device comprising:

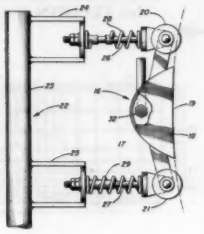
(a) a parabolic collector having an interior focal line and a heat reflecting inner surface;

(b) a side plate at each end of said collector, said side plates joined to said collector and including an arcuate edge adapted to conform to the outer surface of a proximate rotating cylindrical drum;

(c) a thermocouple mounted in the interior of said collector at the focal line thereof;

(d) protective rollers attached to said collector and extending slightly beyond the arc of said arcuate edge of said side plates; and

(e) mounting means supporting said collector and said protective means and adapted to position said collector adjacent a rotating cylindrical drum, said mounting means yieldably supporting said collector and said protective means whereby said collector and said protective means are moveable relative to said mounting means in response to pressure on said protective means from contact with the outer surface of said rotating cylindrical drum, said

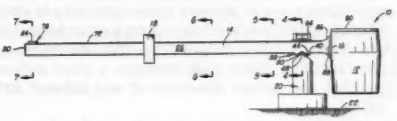


mounting means including a post having an upper and a lower bracket, said brackets having rods connected to said rollers slidably mounted therein and having springs adapted to urge said rollers into a fixed position and to yield under pressure against said rollers such that said collector moves away from said rotating cylindrical drum upon said drum contacting said rollers.

4,321,829
DENSITY MEASURING APPARATUS

David E. Cain, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Mar. 17, 1980, Ser. No. 130,964
Int. Cl.³ G01N 9/02
U.S. Cl. 73—433 3 Claims



1. An apparatus for measuring density of a fluid, comprising:

a container means for holding said fluid;

a balance arm having a first end attached to said container means, said arm having an inverted channel shaped cross-section defined by a top portion and first and second side portions depending downwardly from said top portion, and said arm including a rib member extending downward from said top portion between said first and second side portions, said rib member extending along at least a portion of a length of said balance arm;

a fulcrum means for supporting said balance arm;

a balance weight, slidably disposed on said balance arm;

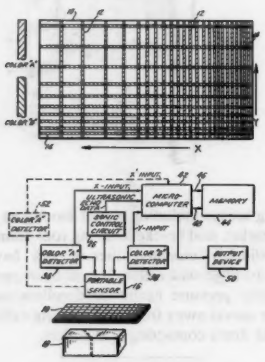
wherein said balance arm includes a support means for engaging said fulcrum means, so that said balance arm is supported by said fulcrum means, said support means including first and second tabs extending downward from said first and second side portions, respectively, said first and second tabs having first and second downward opening recesses disposed therein, respectively, for receiving said fulcrum means; and

wherein said fulcrum means includes a knife edge means for engaging said support means of said balance arm, said knife edge means having an upward opening recess disposed therein in which said rib member of said balance arm is received when said knife edge means is engaged with said support means of said balance arm.

4,321,830
OPTICAL BICHROMATIC POSITION FINDER

Michael Horn, Sound Beach, N.Y., assignor to Optsonic Research Associates, Inc., New York, N.Y.

Division of Ser. No. 102,241, Dec. 10, 1979, Pat. No. 4,275,596.
This application Dec. 15, 1980, Ser. No. 216,566
The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.
Int. Cl.³ G01N 29/04
U.S. Cl. 73—607 8 Claims



1. A method for determining the location of a first object with respect to a surface of a second object, comprising the steps of:

disposing a colored surface of a third object stationary with respect to said surface of said second object, said colored surface being colored with a first color whose intensity varies according to a first selected mathematical relation along a first direction on said colored surface and with a second color whose intensity varies according to a second selected mathematical relation along a second direction on said colored surface oblique to said first direction;

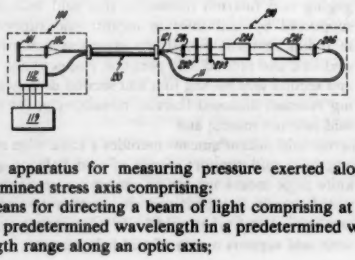
moving said first object with respect to a plane defined by said first and second directions of said colored surface; and

measuring the respective intensity of each of said two colors at a point on said colored surface corresponding to the location of said first object.

4,321,831
DIGITALLY COMPATIBLE OPTICAL PRESSURE MEASUREMENT

Richard G. Tomlinson, Glastonbury, and William H. Glenn, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 26, 1980, Ser. No. 191,194
Int. Cl.³ G01L 11/00
U.S. Cl. 73—705 5 Claims



1. An apparatus for measuring pressure exerted along a predetermined stress axis comprising:

(a) means for directing a beam of light comprising at least one predetermined wavelength in a predetermined wavelength range along an optic axis;

(b) a plurality of optical elements intersecting said beam and disposed along said optic axis, comprising:

(i) a first polarizing element having a first polarization axis oriented at a predetermined angle with respect to said stress axis,

(ii) a second polarizing element oriented parallel to said first polarizing element,

(iii) a pressure sensing element of photoelastic material, responsive to pressure applied along said stress axis, mounted intermediate said first and second polarizing elements, for modifying said light beam in response to said applied pressure,

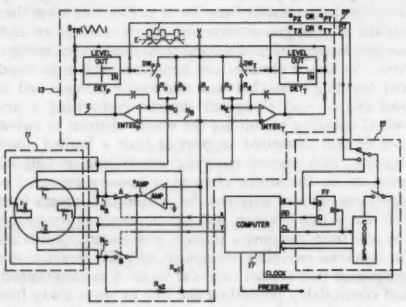
(iv) a birefringent plate disposed intermediate said first polarizing element and said pressure sensing element;

(c) means responsive to light intensity for analyzing light emerging from said second polarizing element and identifying a dip wavelength within said wavelength range for which said emerging light has an intensity minimum, which wavelength provides a measure of said applied pressure.

4,321,832
HIGH ACCURACY MEASURING APPARATUS

Wesley G. Runyan, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 7, 1980, Ser. No. 128,334
Int. Cl.³ G01L 19/04
U.S. Cl. 73—708 59 Claims



1. Pressure measuring apparatus comprising:

(a) first means comprising resistors λ_1, λ_2, λ_3, and λ_4, at least one of which is variable with pressure,

(b) circuitry second means comprising switching means having predetermined connection with said resistors,

(c) circuitry third means, having predetermined connection with said second means, for generating, as controlled by said second means, non-simultaneously occurring first and second pulse width modulated signals, said first signal having a duty ratio DR_1 indicative of the resistor ratio (λ_1/λ_2), said second signal having a duty ratio DR_2 indicative of the resistor ratio (λ_4/λ_3), said second means determining which of the first or second signals is generated by, in effect, substituting the $[\lambda_3,\lambda_4]$ pair for the $[\lambda_1,\lambda_2]$ pair, or vice-versa,

(d) A/D converter fourth means for receiving said first and second pulse width modulated signals and outputting first and second digital words representing, respectively, DR_1 and DR_2,

(e) digital fifth means for storing, at least temporarily, at least the earlier generated one of said first and second digital words, and for producing, from said first and second digital words, an output digital word DW_P indicative of the difference between DR_1 and DR_2,

whereby, any error component introduced by said third means into DR_1 is substantially the same as any error component introduced by said third means into DR_2, and

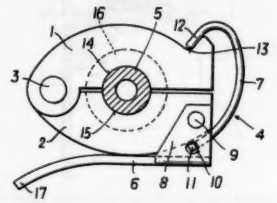
thus the digital word indicative of the difference between DR_1 and DR_2 is substantially free of any error component arising from said third means.

4,321,833

TRANSDUCER DEVICE FOR MEASURING THE INTERNAL PRESSURE IN A PIPE

Rudolf Zeiringer, Graz, Austria, assignor to Hans List, Graz, Austria

Filed Aug. 27, 1980, Ser. No. 181,850
Claims priority, application Austria, Sep. 7, 1979, 5937/79
Int. Cl.³ G01L 7/04
U.S. Cl. 73—730 6 Claims



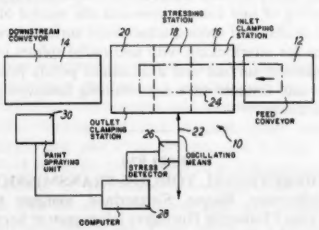
1. A transducer device for measuring the internal pressure in a pipe, comprising a housing made of two parts, a connecting element which acts for a hinge connection between said housing parts, and a chucking device for clamping said housing parts onto said pipe, said chucking device being performed as a snapping catch and comprising a clamp and a spring clip, said clamp is hinged supported at that side of one of said housing parts being opposite said connecting element, said spring clip is hinged supported at said clamp, and said spring clip coacts in locked position of said chucking device with a notch arranged on the other one of said housing parts.

4,321,834

MECHANICAL STRESS GRADING OF TIMBER

George A. Oliver, 72 Lancaster Ave., Craighall Park, Johannesburg, South Africa

Filed May 6, 1980, Ser. No. 147,222
Claims priority, application South Africa, May 7, 1979, 79/2170
Int. Cl.³ G01N 3/32
U.S. Cl. 73—812 17 Claims



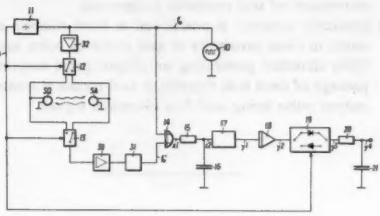
1. A method of stress grading of timber comprising applying an oscillating force to a length of timber that is moving longitudinally by a force applying means which is operatively connected to the timber through a linkage, wherein the method further comprises measuring the said force by determining the stress in a member within the linkage.

4,321,835

APPARATUS FOR MEASURING THE FLOW VELOCITY OF A FLUID

Robert Martin, Vienna, Austria, assignor to Alex Friedmann Kommanditgesellschaft, Vienna, Austria

Filed Jul. 18, 1980, Ser. No. 170,186
Claims priority, application Austria, Jul. 19, 1979, 5008/79
Int. Cl.³ G01F 1/66
U.S. Cl. 73—861.28 3 Claims



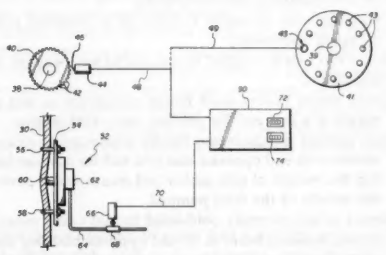
1. Apparatus for the measurement of the flow velocity of a fluid which a vibration exciter triggered by a vibration generator, and a receiver are lying opposite each other and an analyzing circuit for determining the running time of the vibrations through the fluid is provided, characterized in that the analyzing circuit is made up of an exclusive OR-member (14) connected on the input side with the receiver (SA) and the vibration generator operating at constant frequency and developed as a rectangular pulse generator (10), and a low-pass filter (15, 16) following the OR-member, as well as of a circuit forming the differential value between a reference voltage and the voltage found at the low-pass filter (15, 16).

4,321,836

TON-MILE RECORDER

David C. Toalson, 861 White Oak Dr., Bellville, Tex. 77418

Continuation-in-part of Ser. No. 51,515, Jun. 25, 1979, abandoned. This application Jun. 27, 1980, Ser. No. 163,586
Int. Cl.³ G01L 3/00
U.S. Cl. 73—862.44 15 Claims



1. A method of calculating accumulation of work done by the cable of a drawworks system or the like, said method comprising:

detecting incremental rotational movement of the drawworks drum of said drawworks system, there being a plurality of rotational increments for each revolution of said drawworks drum and providing a first electrical signal for each increment of drawworks rotational movement detected;

detecting the weight being supported by the cable said drawworks system during each increment of rotational movement of said drawworks drum, and providing a second electrical signal representative of the weight detected;

electronically integrating said first and second electrical signals and providing an integrated electrical output signal representative of weight applied to said cable and distance of cable movement and indicating work done by said cable during each of said increments of rotational movement of said drawworks drum:

means being rotatable along with said drawworks drum and incorporating a circle of evenly spaced bolts the spacing of which is representative of increments of rotational movement of said rotatable means; and

a proximity detector is positioned in fixed relation and oriented in close proximity to said circle of bolts, said proximity detector generating an output pulse responsive to passage of each bolt thereby as said means is rotated, said output pulse being said first electrical signal.

4,321,837

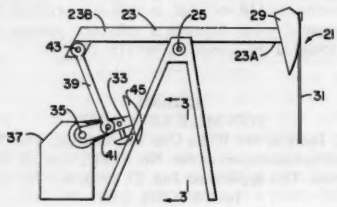
AUXILIARY COUNTER BALANCE FOR WELL PUMP

Roy E. Grigsby, 5433 Durham Ave., Forth Worth, Tex. 76114

Continuation-in-part of Ser. No. 73,694, Sep. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 918,675, Jun. 23, 1978, abandoned. This application Aug. 28, 1980, Ser. No. 182,118

Int. Cl.³ F16H *21/32;* **G05G** *1/00*

U.S. Cl. 74—41 **9 Claims**



1. A well pumping unit comprising:

a walking beam pivotally coupled to a Sampson post for pumping operations,

sucker rod means coupled to one end of said walking beam,

crank means,

power means having shaft means connected to said crank means at a first end for rotating said crank means,

main counter weight means fixedly connected to said crank means at an end opposite said first end for counter balancing the weight of said sucker rod means and a portion of the weight of the fluid pumped,

pitman means pivotally connected to said crank means and to said walking beam at an end opposite said one end for operating said walking beam upon rotation of said crank means,

an axle fixedly connected to said crank means at a position between said main counter weight means and the point of the connection of said shaft means to said crank means,

said axle rotating with said crank means as said crank means is rotated by said power means,

auxiliary counter weight means coupled to said axle for rotation about said axle relative to said crank means to aid in counter balancing the weight of the remaining portion of the fluid pumped, and

means for rotating said auxiliary counter weight means about said axle relative to said crank means to aid in counter balancing the weight of the remaining portion of the fluid pumped.

4,321,838

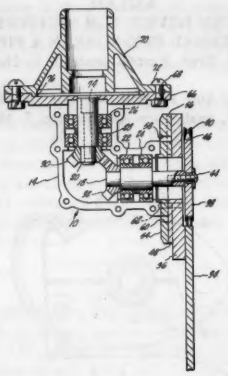
POWER COUPLING FOR A CHAIN SAW

Robert I. Feldman, Box 359, Agoura, Calif. 91301

Filed Aug. 13, 1979, Ser. No. 66,098

Int. Cl.³ F16H *1/14;* **A01D** *35/26*

U.S. Cl. 74—417 **1 Claim**



1. A power coupling for a chain saw, comprising:

a housing, said housing comprising two half casings split longitudinally there through;

power train means for transmitting rotational power through said housing, said power train means including two coupled shafts extending from said housing at right angles to one another;

a first circular attachment flange concentrically positioned on said housing and fixed thereto about the first of said coupled shafts, said first circular attachment flange being integral with one of said two half casings, said first circular attachment flange including attachment points symmetrically positioned about said flange;

a second circular attachment flange concentrically positioned on said housing and fixed thereto about the second of said coupled shafts, said second circular attachment flange being integrally formed with the other of said two half casings and said second circular attachment flange including a first attachment surface having radial splines, said second flange including two fastener slots each extending substantially 180 degrees concentrically on said second flange; and

a chain guide plate attachable to a chain saw and having a rotary drive adapted to be powered by a chain and a second attachment surface coaxially arranged with said rotary drive to mate with said first attachment surface for coupling of said rotary drive and the second of said coupled shafts, said second attachment surface having radial spline for interlocking with said radial splines of said first attachment surface and attachment points positioned to meet said fastener slots for retaining fasteners positioned in said slots.

4,321,839

MONODIRECTIONAL TORQUE-TRANSMISSION GEAR

Cyril Vuilleumier, Bienne, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Mar. 5, 1980, Ser. No. 127,500

Claims priority, application France, Mar. 8, 1979, 79 5930

Int. Cl.³ F16H *55/06*

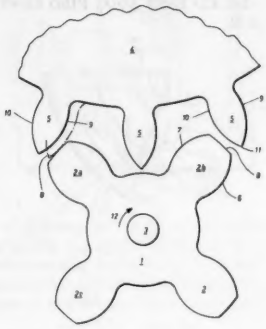
U.S. Cl. 74—462 **8 Claims**

1. A watch movement including a stepping motor, a gear train driven by said motor and at least one hand secured to one of the gears of said train, wherein said train comprises

a driving pinion connected to said stepping motor for step-by-step rotation, said driving pinion having a plurality of identical symmetrical, equidistant teeth, each of which includes top faces in the form of surface segments of a cylinder coaxial with said driving pinion, and

a driven pinion having a plurality of identical symmetrical, equidistant teeth, each of which is pointed,

said pinions meshing with one another, the pitch of the teeth



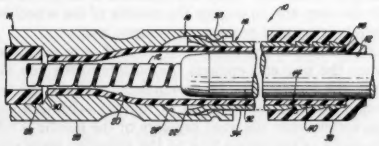
of said driving pinion being one to two times the pitch of said driven pinion, and the shapes of the teeth of said pinions being such that during each pause in said step-by-step rotation, a first and a second of said pointed teeth of said driven pinion extend in front of the top faces of two adjacent teeth of said driving pinion respectively, and a third of said pointed teeth extends between said two adjacent teeth, thus locking said driven pinion against movement from torques exerted on said driven pinion.

4,321,840

MOTION TRANSMITTING REMOTE CONTROL ASSEMBLY (SWIVEL SLEEVE)

Bruce Kalamon, Pottstown, Pa., assignor to Teleflex Incorporated, Limerick, Pa.

Filed Nov. 23, 1979, Ser. No. 96,900
Int. Cl.³ F16C *1/26*
U.S. Cl. 74—501 R **6 Claims**



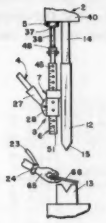
1. A motion transmitting remote control assembly of the type for transmitting motion in a curved path by a flexible motion transmitting core element, said assembly comprising: a flexible motion transmitting core element, guide means for movably supporting said core element and having an end portion, swivel means pivotally attached to said end portion of said guide means for swivelling movement relative to said guide means and movably supporting said core element, said swivel means attached to said guide means at a swivel joint, and sleeve means surrounding said core element and allowing movement of said core element relative thereto and extending from within said guide means through said swivel joint into said swivel means and being flexible at said swivel joint for reducing friction of linear movement of the core element within the assembly and providing a seal throughout the swivel joint.

4,321,841

PRESS SAFETY DEVICE

Gerald J. Felix, Wyoming, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Apr. 10, 1980, Ser. No. 138,930
Int. Cl.³ F16P *3/06*
U.S. Cl. 74—615 **22 Claims**



1. In a safety device for a machine with coverging parts between which stock material is manually inserted, and having means for insuring selective manipulation of the hands of the machine operator between a feed position and a safety position, the improvement comprising:

a ram adapted for connection with a stationary portion of the machine, and including a rod mounted for reciprocation along a plane substantially parallel with the plane along which the machine parts converge;

a collar adapted for connection with a portion of said machine which reciprocates with a moving one of said converging machine parts, and including a central aperture therethrough in which said rod is slidingly received;

a sleeve connected with said rod at a position thereon disposed downstream of said collar in the direction of convergence of the moving machine portion to which said collar is connected; said sleeve being shaped for selective abutment with said collar;

means for operably connecting said hand manipulation means with said sleeve; and

means for activating said ram and translating said rod at the beginning of each machine cycle in a direction identical with the converging motion of said moving one machine part, whereby said rod translation activates said manipulation means and positively insures that the hands of the machine operator are drawn out from inbetween the converging machine parts to said safety position; and in the event that said ram does not translate at the beginning of the machine cycle, said collar abuttingly engages said sleeve during the converging stroke of the machine, and moves said rod therewith to activate said hand manipulation means and draw the hands of the user into the safety position.

4,321,842

COMPOUND EPICYCLIC COG BELT SPEED REDUCER

Frank L. Stromotich, 4625 N. Piccadilly Rd., West Vancouver, B.C. V7W 1E3, Canada

Continuation-in-part of Ser. No. 937,817, Aug. 29, 1978, abandoned. This application Feb. 15, 1980, Ser. No. 121,987
Claims priority, application Canada, Feb. 19, 1979, 321714
Int. Cl.³ F16H *1/28, 9/26, 11/08*
U.S. Cl. 74—762 **29 Claims**

1. A compound epicyclic speed reducer comprising:

a frame;

a reaction sun;

means for maintaining said reaction sun stationary relative to said frame;

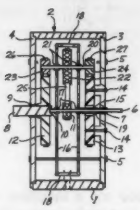
an output sun coaxial with said reaction sun, the common axis of said two suns defining a primary axis;

at least two planets, one for each of said suns, including a reaction planet and an output planet;

planet shaft means for carrying said planets for conjoint rotation;

an idler carrier assembly rotatably supporting said planet shaft means spaced from and extending substantially parallel to said primary axis, the axis of said planet shaft means supported by said idler carrier assembly defining a secondary axis;

at least two endless loop force-transmitting elements connecting, respectively, said reaction sun and said reaction planet, and said output sun and said output planet; and



rotary input means for driving said planet shaft means and thereby effecting conjoint rotation of said two planets about said secondary axis, rotation of said reaction planet effecting rotation of said idler carrier member about said primary axis for orbiting of said planet shaft and said planets about said primary axis, and rotation of said output planet about said secondary axis in combination with orbiting of said output planet about said primary axis effecting rotation of said output sun.

4,321,843
PROCESS FOR THE PRODUCTION OF DRAWING DIE BORES

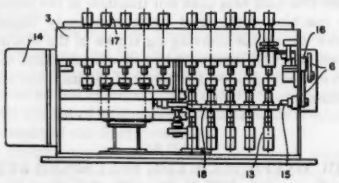
Max Schwab; Peter Heinen; Willi Diederichs; Peter Gossens; Fritz-Gunter Ohloff, and Hubert Minkenberg, all of Heinsberg, Fed. Rep. of Germany, assignors to Akzo, N.V., Arnhem, Netherlands

Filed May 8, 1979, Ser. No. 36,975

Claims priority, application Fed. Rep. of Germany, May 8, 1978, 2820018; May 8, 1978, 2820019

Int. Cl.³ B24B *1/00*

U.S. Cl. 76—107 A **13 Claims**



1. In a process for the production of drawing die bores in which each bore has an inlet cone part and a cylindrical part along a common axis, the improvement comprising a two-step grinding and finishing procedure of cross-grinding the inlet cone in a first step and then calibrating the cylindrical part in a separate second step, wherein a uniform grinding and finishing of said inlet cone is carried out in the first step by means of a grinding tool which is radially deflectable in the bore within defined limits, rotating said tool and the die workpiece in the same direction but at different rotational speeds while also oscillating said tool in axial direction with a frequency and amplitude dependent upon the difference in rotational speeds and the final dimensions of the bore, and resiliently pressing said workpiece onto the tool while strongly damping the oscillating movement imparted thereto by said tool.

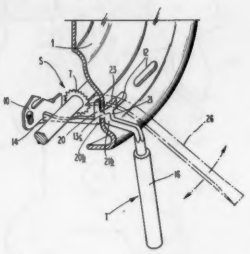
4,321,844
BRAKE ADJUSTING TOOL

Peter P. Krill, Philadelphia, Pa., assignor to Mrs. Peter P. Krill, Philadelphia, Pa.

Filed Jun. 16, 1981, Ser. No. 274,308

Int. Cl.³ B25B *27/00*; F16D *65/46*

U.S. Cl. 81—3 R **6 Claims**



1. For use in connection with the adjusting spindle of a vehicle wheel brake of the kind wherein the adjusting spindle is accessible through at least one slot formed in the wheel hub, a tool adapted to be temporarily secured to the wheel hub and in such condition maintain the adjusting lever and star wheel out of engagement whereby both hands are free for turning the brake drum and for adjusting the star wheel, the tool comprising:

an elongated, axially extending body;

an operating head formed on one end of the body;

a manipulating head formed on the opposite end of the body;

a hold-out arm formed on the body adjacent to the head and extending radially outwardly from the body;

a stop arm formed on the body between the hold-out arm and the handle and extending radially outwardly from the body;

the head and the arms respectively being dimensioned to provide for the handle to be manipulated to orient the head and hold-out arm in registry with said hub slot and push the head and the hold-out arm through the hub slot to cause the head to engage the adjusting lever and disengage the lever from the star wheel and when the head and lever are so engaged for the stop arm to engage the outside of the wheel hub and thereby stop said pushing movement; and

the dimensions of the body between said arms providing that when the stop arm engages the outside of the hub as aforesaid, the handle may be manipulated to turn the body to rotate the hold-out arm out of registry with said slot and, thereafter when the axial pressure of the handle is relieved, the force of the spring bias on the adjusting lever can exert a force on the body in a direction opposite to first said direction to cause the hold-out arm to firmly engage the inside of the wheel hub to temporarily secure the tool in said position whereby both hands of the mechanic are free for turning the brake drum and adjusting the star wheel.

4,321,845
BAR PULLER FOR NUMERICALLY CONTROLLED LATHE

Tibor Szabo, 2506 West Ave., 130th, San Leandro, Calif. 94577, and Robert L. Karr, 36375 Bettencourt St., Newark, Calif. 94560

Filed Jun. 16, 1980, Ser. No. 160,986

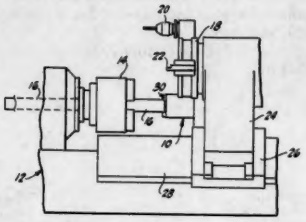
Int. Cl.³ B23B *13/00, 5/22*

U.S. Cl. 82—2.5 **10 Claims**

1. A bar puller for attachment to a numerically controlled turret lathe having multiple tool stations comprising:

a housing having mounting means for mounting the housing on a tool station of the lathe turret;

an actuator head having locating means for positioning said head substantially within said housing with limited reciprocal movement therein, said actuator head having an exposed face;



a plurality of gripping jaws uniformly mounted on said face of said actuator head with means for limited reciprocal displacement of said jaws on said face; and

actuation means for actuating said jaws in response to displacements of said actuator head relative to said housing.

4,321,846

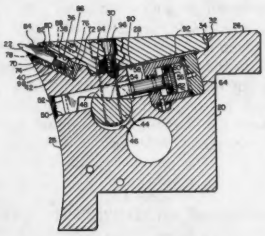
TOOL HOLDER

Nicolae Neamtu, Weymouth, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Apr. 18, 1980, Ser. No. 141,557

Int. Cl.³ B23B *29/10*

U.S. Cl. 82—36 R **2 Claims**



1. A toolholder retaining a cutting tool having an elongated cutting edge, said toolholder comprising a body portion, a clamp portion operably connected to said body portion for pivotal movement thereon about a pivot axis parallel with said cutting edge, said body portion having a first jaw portion, said first jaw portion having therein a first elongated recess extending inwardly of the body portion from an edge thereof, a tool pad disposed in said recess and extending substantially throughout the length of said recess and parallel to said pivot axis, said tool pad including a first wall having a tool engaging surface adapted to engage a first side of said tool, and a second wall disposed in a bottom portion of said jaw portion, a nose key resting against said first and second tool pad walls and adapted to engage an edge of said tool opposite a cutting edge of said tool, said clamp portion having a second jaw portion including a second elongated recess extending parallel to said pivot axis, said jaw portions being adapted to receive said cutting tool therebetween, and a holding strap pivotally mounted on said second jaw portion, said holding strap having an elongated protrusion extending therefrom and pivotally disposed in said second recess, said holding strap having a flat surface for engagement with a second surface of said cutting tool, said clamp portion and said tool pad being provided with conduits for cooling fluid, said conduits having openings in said clamp portion and said tool pad proximate the cutting edge of said cutting tool and on either side thereof.

4,321,847

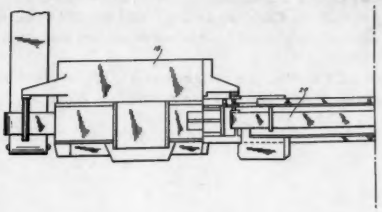
CONTINUOUS COLD CUT SLICING MACHINE

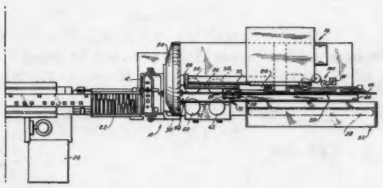
Oscar W. Dillon, Essex, Conn., assignor to Cashin Systems Corp., Williston Park, N.Y.

Filed Nov. 9, 1979, Ser. No. 92,665

Int. Cl.³ B26D *7/30, 5/20*

U.S. Cl. 82—77 **32 Claims**





1. A combination of a slicing machine having a slicing blade for slicing a loaf of product having a front and rear end; a first feed means for feeding said loaf into said blade; a control means for determining the rate of feed of product by the first feed means towards said blade and consequently controlling slice thickness; a second feed means for feeding the loaf towards the blade when said loaf becomes disengaged from said first feed means during slicing operation which includes a gripper means for engaging the rear end of the loaf with said second feed means being driven towards the blade by the front end of the next succeeding loaf to be sliced; and a clutch means connected to said second feed means and capable of regulating the feed of the product.

4,321,848

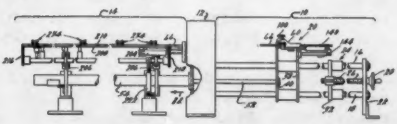
CYLINDRICAL MEMBER PROCESSING APPARATUS

Barry C. Millar, Islington, and Keith W. Little, Georgetown, both of Canada, assignors to Bundy Corporation, Detroit, Mich.

Division of Ser. No. 816,075, Jul. 15, 1977, Pat. No. 4,182,206. This application Aug. 14, 1979, Ser. No. 66,456

Int. Cl.³ B26D *3/16*

U.S. Cl. 83—153 **33 Claims**



1. A clamp for restraining a predetermined number of elongated cylindrical members in a substantially flat array comprising:

a support structure including a surface for supporting a

portion of each of said predetermined number of cylindrical members;

means defining a sidewall projecting generally perpendicularly from said supporting surface;

hold down means supported in overlying relationship to said supporting surface and spaced therefrom a distance less than twice the diameter of said cylindrical members;

movable means adapted for oscillatory movement toward said sidewall means and between said hold down means and said supporting surface;

actuating means for causing said movable means to clamp said predetermined number of cylindrical members in a substantially flat array between said movable means, said sidewall means, said hold down means and said supporting surface; and

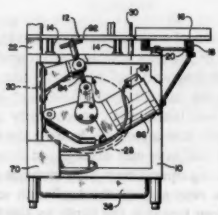
means for sensing the presence of a number of cylindrical members less than said predetermined number.

4,321,849

TENSION ADJUSTMENT FOR A BAND SAW

Stuart E. Athey; Thomas M. Johnson, and Raymond P. Shaeffer, all of Troy, Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed May 19, 1980, Ser. No. 150,837
Int. Cl.³ B23D *55/10*
U.S. Cl. 83—816 **9 Claims**



1. In a band saw including a frame, a cutting table supported by said frame, at least two band wheels mounted for rotation about their respective substantially parallel central axes and disposed in a generally common plane in spaced relation on opposite sides of said cutting table, an endless band saw blade encircling said wheels and driven thereby with a blade flight exposed at said cutting table for cutting an object placed thereon, and drive means coupled to rotate one of said band wheels, wherein the improvement comprises:

support means mounted to said frame for pivotal movement about an axis parallel to said axis of rotation of said one band wheel, said drive means and said one band wheel being mounted thereto for movement therewith and said support means including a gear box having an output shaft coupled to said one band wheel for both support and rotation thereof;

adjustment means mounted to said frame and connected to said support means, for causing said pivotal movement thereof to adjust the tension in said band saw blade; and

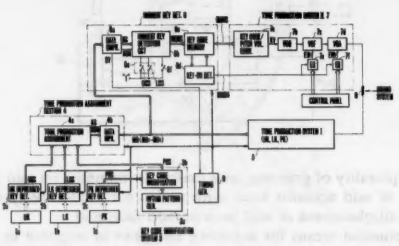
said drive means including a motor having a shaft drivingly coupled to said output shaft supporting said one band wheel, and said motor is disposed on an opposite side of said output shaft from the location of said pivotal axis of said support means.

4,321,850

ELECTRONIC MUSICAL INSTRUMENT WITH HIGHEST PRIORITY KEY TONE PRODUCTION

Akiyoshi Oya, Hamamatsu, and Yasuji Uchiyama, Hamakita, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed May 1, 1980, Ser. No. 145,553
Claims priority, application Japan, May 5, 1979, 54-54858; Jun. 21, 1979, 54-77515
Int. Cl.³ G10H *1/22*
U.S. Cl. 84—1.01 **8 Claims**



1. An electronic musical instrument comprising:

a plurality of keys;

a depressed key detector which detects a plurality of depressed keys among said keys for producing key identifying signals corresponding to the depressed keys;

a highest signal detector which detects a highest signal among said key identifying signals having a highest priority in accordance with a predetermined order of priority;

a musical tone producing unit responsive to the detected highest signal for producing a musical tone of a tone pitch corresponding to said highest signal;

a reference memory device for storing the detected highest signal in accordance with a predetermined condition; and

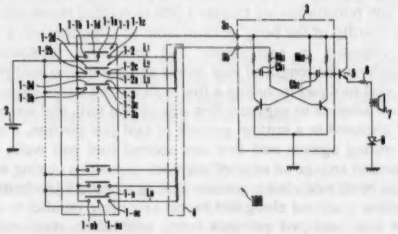
a controller for inhibiting the musical tone producing unit from producing the musical tone according to a relationship between the detected highest signal and an output of said reference memory device.

4,321,851

ELECTRONIC MUSICAL INSTRUMENT

Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jun. 24, 1980, Ser. No. 162,567
Claims priority, application Japan, Jun. 28, 1979, 54-81625
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **29 Claims**



1. An electronic musical instrument comprising:

a power source;

a plurality of keys;

means for generating a signal corresponding to a note of a depressed key, said signal generating means including a

source terminal adapted to be supplied with voltage from said power source and a control input terminal adapted to be supplied with a control signal corresponding to the note of the depressed key.

electric power connecting means interposed between said power source and said source terminal and interlocked with a depression of at least one of said keys, said electric power connecting means being normally open so that no power is applied to said source terminal;

means responsive to the depression of at least one of said keys for supplying said control signal corresponding to a musical tone signal to be produced to said control input terminal; and

means for producing a musical tone in accordance with an output of said signal generating means.

4,321,852

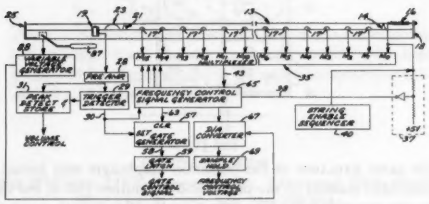
STRINGED INSTRUMENT SYNTHESIZER APPARATUS

Leroy D. Young, Jr., 4850 SW. 91st Ave., Miami, Fla. 33165

Filed Dec. 19, 1979, Ser. No. 105,160

Int. Cl.³ G10H *3/00*

U.S. Cl. 84—1.16 **12 Claims**



1. Musical apparatus for use with a synthesizer comprising:

a fret bearing surface having at least one string stretched over a plurality of frets, each of said frets representing a particular musical note; and

means for providing a signal indicative of the note represented by a particular selected fret to said synthesizer, said means being operative to detect whether or not said string is depressed against said particular fret and against the next adjacent fret and to provide said signal only if both said particular fret and said adjacent fret are detected as having the string depressed against them.

7. In a device for controlling a synthesizer from a stringed instrument, the apparatus comprising;

a fret board having a note ordering assignment wherein each fret is assigned a corresponding number and wherein no fret having an assignment of one given number is within a fixed distance of frets having the same number, said distance being chosen such that frets having the same number are beyond reach of the player's fingers.

4,321,853

AUTOMATIC EAR TRAINING APPARATUS

John E. Tumblin, Atlanta, Ga., assignor to Georgia Tech Research Institute, Atlanta, Ga.

Filed Jul. 30, 1980, Ser. No. 173,601

Int. Cl.³ G09B *15/02, 15/08;* **G10G** *1/02*

U.S. Cl. 84—454 **8 Claims**

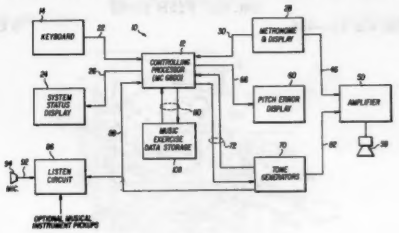
1. An automated music teaching system for detecting errors of pitch and rhythm in a student musical exercise with an accuracy greater than that of the human ear and for displaying both the type and the magnitude of the error in a manner useful to the student, the system being comprised of:

a system control means;

means for providing a musical input to the system; said musical input being under the control of the student and having a pitch and rhythm that is both convertible and recognizable by said system control means;

musical timing means for providing to the student a display showing the timing of musical notes, for producing an audible signal for musical timing, and for providing a musical time reference for the system control means;

tone generator means under the control of said system control means for creating and mixing tones to provide a musical output to the student; said musical output from said tone



generator means inputting said system control means wherein said musical output from said tone generator means and said musical input under the control of the student are compared for errors made by the student; and

a pitch error display means for displaying to the student any error detected in the pitch of said musical input to thereby challenge the pitch and rhythmic acuity of the student.

4,321,854

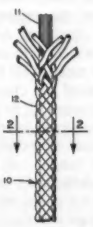
COMPOSITE LINE OF CORE AND JACKET

Danny R. Foote, and Susan F. Turner, both of Spirit Lake, Iowa, assignors to Berkley & Company, Inc., Spirit Lake, Iowa

Filed Jun. 1, 1979, Ser. No. 44,386

Int. Cl.³ D04C *1/12;* **A01K** *91/00*

U.S. Cl. 87—6 **8 Claims**



1. A composite line containing two different filamentary materials in the form of a core and jacket of different tensile strengths and elongations, said core sequentially breaking at least twice under a predetermined tensile loading of the line without breaking the jacket thereby signalling the user that too great a tensile loading exists and the jacket gripping the core at the breaks without affecting the further utilization of the line.

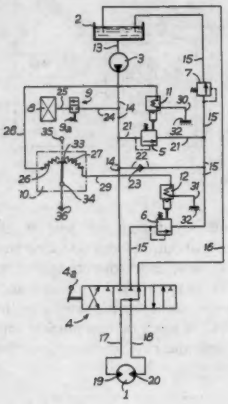
6. A composite fishing line comprising a core, a braided outside jacket and a braided intermediate jacket, the core being made of material which will break under a predetermined tensile loading of the line to signal the user that too great a tensile loading exists, said braided jackets being made of a different material from said core which do not break under said predetermined tensile loading and said outside jacket has a braid tightness which grips the core and intermediate jacket and permits reoccurrent breaks in the core material under the reoccurrence of said tensile loading without affecting the utilization of the line.

4,321,855

DRIVE-ASSISTING SYSTEM COMPRISING AT LEAST A FLUID ENGINE

Serge B. Bacquie, and Jean M. R. Rouillard, both of La Croix St Ouen, France, assignors to Poclain Hydraulics, Verberie, France

Filed Jan. 23, 1980, Ser. No. 114,715
Claims priority, application France, Jan. 29, 1979, 79 02225
Int. Cl.[3] F15B 13/02
U.S. Cl. 91—436 6 Claims



1. A drive-assisting device comprising at least:
a fluid relief engine (1) having an inlet (19),
a source of pressurized fluid (3) having a delivery connector,
an engine supply pipe (14-17) connecting the delivery connector of the fluid source to the engine inlet (19), and
a calibrated discharge valve (5), so-called relief valve which is shunt connected (21) to the supply pipe (14) and which is provided with means (11) for adjusting its calibration, wherein said device comprises, in known manner, a release pipe (18-15) of the engine, on which is positioned another calibrated discharge valve (6), so-called check valve, which is provided with means (12) for adjusting its calibration, control means (10) for said calibration adjusting means of said relief and check valves, the calibration-adjusting control means (10) of both the relief and check valves being synchronized by means of one manipulator (35) with two separate operating ranges (26 and 27) separated by a neutral range, one of the operating ranges corresponding to substantially nil pressures for one of the valves, and to non-nil pressures for the other valve, the other operating range corresponding to substantially nil calibration pressures for the said other valve and to non-nil pressures for the complementary valve, and, the neutral range corresponding to a substantially nil calibration pressure for each valve.

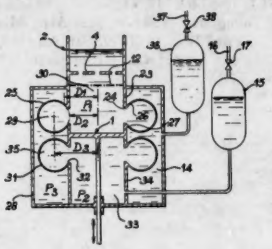
4,321,856

DIAPHRAGM PULSER

Henri Gasc, Carpentras, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 7, 1980, Ser. No. 110,195
Claims priority, application France, Jan. 9, 1979, 79 00407
Int. Cl.[3] F01B 19/00
U.S. Cl. 92—48 2 Claims

1. A pulser for transmitting the reciprocating motion of a piston to a fluid contained in a chamber via a duct which opens into said chamber, wherein said pulser comprises at least one pulsation diaphragm joined to the piston and to a rim of the duct in leak-tight manner, means for applying a pressure which compensates for the static pressure of the fluid on the piston and the pulsation diaphragm, means whereby the difference between the pressure exerted on the internal wall of the diaphragm on the fluid side and the pressure exerted on the external wall of said diaphragm is minimized during operation of the pulser but maintained at a positive value, the pulsation diaphragm being given the shape of a hollow torus cut by a cylinder having an axis corresponding to that of the torus and a diameter which is larger than that internal diameter of the torus while being smaller than or equal to the mean diameter of said torus with the result that one of the edges of the cut hollow torus is joined to said duct rim in leak-tight manner whilst the other edge of said cut torus is joined to the piston in leak-tight manner, wherein said pulsation diaphragm comprises a flexible reinforcement which permits deformation of said diaphragm without modifying the area of its envelope, wherein the static pressure compensation means comprise at least one pressure compensation diaphragm having the same shape and



the same structure as the pulsation diaphragm and joined in leak-tight manner to the piston and to another rim of the duct on the opposite side of the pulsation diaphragm with respect to the piston, means for pressurizing the internal space delimited on the one hand by the duct at the end remote from the location at which said duct opens into the chamber and on the other hand by the piston and by the interior of the compensation diaphragm, and means whereby the difference between the pressure exerted within the compensation diaphragm and the pressure prevailing externally of said diaphragm is minimized during operation but remains at a positive value, wherein the means for minimizing the pressure difference between the interior and exterior of the pulsation diaphragm and the pressure difference between the interior and the exterior of the compensation diaphragm are constituted by a single pressurization enclosure which surrounds the two diaphragms.

4,321,857

INFRARED GAS GRILL

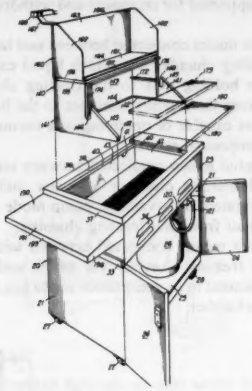
Willie H. Best, 18C The Heritage, Columbia, S.C. 29201

Filed Apr. 8, 1980, Ser. No. 138,854
Int. Cl.[3] A47J 37/04
U.S. Cl. 99—340 41 Claims

1. A grill assembly comprising:
(a) a cabinet;
(b) a source of combustible gas;
(c) a gas burner assembly in said cabinet, said gas burner having a plenum box with a plenum chamber communicating with said source of combustible gas for receiving gas therefrom, said plenum box being supported by and disposed in the interior of said cabinet, said plenum box having an open upper portion open to said plenum chamber, a foraminous radiant burner element over said open upper portion, said radiant burner element being provided with plurality of gas passageways through which the combustible gas which enters said plenum chamber passes to the exterior upper surface of said burner element for burning at the upper surface of said burner element to generate heat and products of combustion;
(d) a fire shield carried by said cabinet, said fire shield defin-

ing a channel above said element and through which the products of combustion pass from said element;

(e) a stationary food supporting means disposed above said



element for supporting items of food in spaced relationship to said burner element for being cooked by the heat generated by the combustion of said combustible gas at said of said burner.

4,321,858

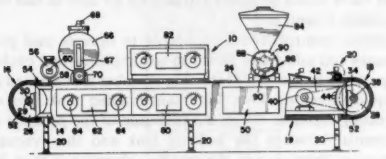
CREPE MAKER

Donna Williams, 12520 Edgewater Dr., Lakewood, Ohio 44107

Filed Oct. 9, 1980, Ser. No. 195,604

Int. Cl.³ A21B *5/00*; A21C *9/00*

U.S. Cl. 99—353 **5 Claims**



1. An apparatus for preparing a food product having at least a cooked batter outer shell and a filling material contained therein comprising:

a frame;

a motor-driven, continuous conveyor belt mounted on said frame;

means for oiling the surface of said belt;

a batter dispenser having a container for holding batter and an associated nozzle for dispensing batter to said surface of said belt;

a first griddle means for first heating at least said belt only;

a second griddle means for heating batter dispensed on said belt;

a filling material dispenser having a hopper for holding filling material and an associated apportionment mechanism for dispensing apportioned amounts of filling material;

a plurality of side-folding spades disposed to said belt to fold over side portions of said batter in conveyance on said belt and having arcuately configured sidewalls, tapered from one end to the other end;

a rolling mechanism comprising a power driven roller in association with a rolling spade disposed to said belt for rolling said batter and filling material contained therein over onto itself; and,

control means for controlling the operation of said apparatus.

4,321,859

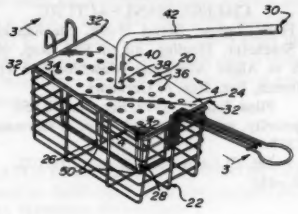
TOOL USED TO FACILITATE DEEP FAT FRYING

Paul Rimmeir, 10 S. Front St., Philadelphia, Pa. 19106

Filed Sep. 25, 1980, Ser. No. 191,047

Int. Cl.³ A47J *37/12*

U.S. Cl. 99—416 **8 Claims**



1. A device for use with a conventional deep fat frying basket to facilitate the frying of a porous mass of a food product located within said basket when said basket is immersed in a hot cooking liquid, said device comprising cover plate means arranged for disposition over the mouth of said basket to lock said food product therein and at least one projecting rod-like member, extending downward from said cover plate means into said basket for substantially the full depth thereof, said member including at least one longitudinally extending recessed face for facilitating the transfer of said hot cooking liquid through the interior of said mass.

4,321,860

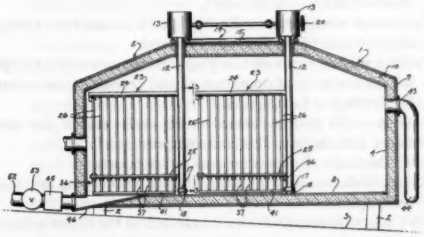
CLOSED CHEESE MAKING VAT WITH RECIRCULATING WHEY

Gretz L. Hazen, Jefferson, Wis., assignor to DEC International Inc., Madison, Wis.

Filed Jan. 17, 1980, Ser. No. 112,954

Int. Cl.³ A23C *3/02, 19/02*

U.S. Cl. 99—453 **4 Claims**



1. A cheese making vat, comprising a vessel to contain cheese curds and whey, a vertical shaft disposed within the vessel, a frame connected to the shaft and extending outwardly from the shaft, reversible drive means for rotating the shaft, implement means carried by the frame and arranged so that when the shaft is rotated in a cutting direction the implement means acts to cut the curds and when the shaft is rotated in the opposite stirring direction the implement means acts to stir the curds, outlet means disposed in the upper portion of the vessel, inlet means disposed in the lower portion of the vessel, conduit means connecting the outlet means and the inlet means, means for recirculating whey from the upper portion of the vessel through said outlet means and said conduit means and intro-

ducing the whey into the lower portion of the vessel through said inlet means, and a heat exchanger unit disposed in the conduit means for heating the whey passing through said conduit means, the introduction of heated whey into said vessel through said inlet means providing gentle agitation for the curds and said implement means serving to move the curds past said inlet means to continuously expose the curds to the recirculating whey.

4,321,861

CHEESE MANUFACTURE

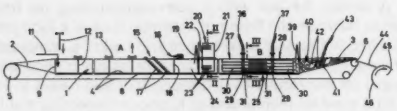
Gottfried Hain, Lahen; Bernd Wulff, Stephanskirchen, and Johann Stacheter, Hogling, all of Fed. Rep. of Germany, assignors to Alpha Alpenland Maschinenbau Hain & Co., K.G., Munich, Fed. Rep. of Germany

Filed Jun. 21, 1979, Ser. No. 50,855

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1978, 2827257

Int. Cl.[3] A01J *25/00;* A23C *19/076*

U.S. Cl. 99—455 11 Claims



1. Apparatus, for the production of cottage or similar fresh cheese, comprising:

(i) an elongated trough-shaped container having an inlet end and an outlet end,

(ii) an endless conveyor belt having an upper run and a return run, the upper run entering the container at the inlet end and passing along the container to form a moving conveyor trough therein and leaving the container at the outlet end,

(iii) means for feeding cheese curd-whey mixture onto the conveyor at the inlet end,

(iv) first stirrer means dipping into the conveyor trough downstream of the inlet end,

(v) second stirrer means dipping into the conveyor trough downstream of the first stirrer means

(vi) circulation pipes discharging into the conveyor trough within the zone of operation of said second stirrer means for feeding in heated whey

(vii) an outlet pourer formed at the outlet end of the container and rising to the container edge.

(viii) third stirrer means on said outlet pourer

(ix) a circulation pipe for whey rinsing discharging into said outlet pourer,

(x) a whey discharge device connected to the outlet pourer, and

(xi) a washing device, including an endless belt conveyor, for curd granulate from which whey has been extracted.

4,321,862

METHOD AND APPARATUS FOR TREATING FOODSTUFFS WITH LIQUID

William H. Stevenson, III, Rte. 5, Box 532, Travelers Rest, Easton, Md. 21601

Filed Sep. 11, 1979, Ser. No. 74,556

Int. Cl.[3] A23B *4/06*

U.S. Cl. 99—468 8 Claims

1. In an apparatus for batch treatment of foodstuffs with a liquid, the combination of a holding tank for the liquid;

refrigeration means operatively associated with the holding tank for maintaining liquid in the holding tank within a desired temperature range;

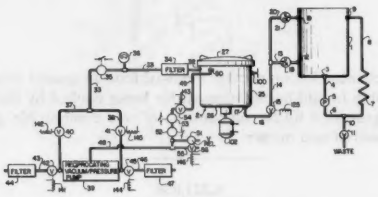
a sealed treating chamber in which a quantity of foodstuff can be supported for treatment and withdrawn after treatment;

first conduit means connected between said holding tank and said treating chamber via which liquid can be delivered from the holding tank to the treating chamber and returned from the treating chamber to the holding tank;

pump means capable of operating in a vacuum pump mode and a compressor mode;

second conduit means connected between said pump means and said treating chamber whereby said pump means when operated in its vacuum pump mode can operate to evacuate air from said treating chamber;

third conduit means connected between said pump means and said treating chamber via which said pump means when operated in its compressor mode can pressurize said treating chamber;



first valve means connected to control liquid flow in said first conduit means;

second valve means connected to control air flow in said second conduit means;

third valve means connected to control air flow in said third conduit means; and

automatic control means connected to operate said pump means and said valve means to accomplish a first cycle of operation in which said treating chamber is evacuated and liquid therefore flows from said holding tank into said treating chamber under the influence of the pressure differential between the holding tank and the evacuated treating chamber and the treating chamber is then held under subatmospheric pressure; a second cycle in which said pump means pressurizes said treating chamber and a positive pressure is then maintained in said treating chamber; and a third cycle in which liquid flows from said treating chamber under the influence of said positive pressure.

4,321,863

FRUIT AND VEGETABLE PROCESSING APPARATUS

Peter S. Dimov, Novi Krichim; Georgi N. Pavlov; Atanas N. Stoyanov, both of Plovdiv, and Ivan D. Nankinov, Novi Krichim, all of Bulgaria, assignors to DSO "Bulgarplod", Sofia, Bulgaria

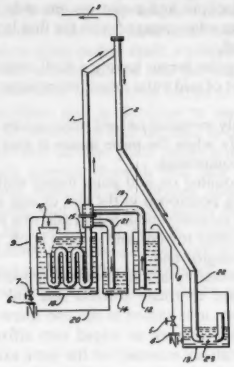
Filed May 7, 1980, Ser. No. 147,539

Int. Cl.[3] A23N *7/00;* B02B *3/12;* B02C *11/08*

U.S. Cl. 99—470 4 Claims

1. Apparatus for treating produce such as fruits and vegetables, comprising a pipe having an inlet end immersed in a hot water tank, a perforated receiver connected to said inlet end of the pipe to receive produce to be treated and hot water from the tank, an expansion chamber connected to the outlet end of the tank, a pipeline connected to said expansion chamber, a source of vacuum connected to said pipeline, said pipeline receives and forwards treated produce under the influence of

vacuum from said expansion chamber, means to separate hot water from the produce in said expansion chamber, and means



to subject the treated produce to cold water as the produce travels away from said expansion chamber.

4,321,864

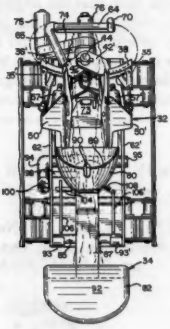
EGG BREAKING AND CONTENTS SEPARATING MACHINE

Charles H. Willsey, Rte. 1, Maple Hill, Kans. 66507

Filed Jan. 22, 1980, Ser. No. 114,261

Int. Cl.³ A23J *1/09*; A47J *43/14*

U.S. Cl. 99—500 **5 Claims**



1. An egg breaking and contents separating machine comprising a series of egg breaking and contents separating mechanisms mounted on vertically disposed bracket forming supporting members which are connected together in side by side relation so as to form an endless traveling conveyor assembly which is mounted on rotatable conveyor support members secured on vertically disposed, spaced shafts on a supporting frame, each said bracket member having mounted at its upper end an egg receiving, clamping and breaking mechanism and having mounted at its lower end an egg contents separating mechanism, both said mechanisms being mounted for swinging movement outboard of said bracket member, said egg receiving, clamping and breaking mechanism including a pair of egg supporting cradle members disposed at the outer ends of elongate plate support members which extend outboard of said bracket member and which have pairs of spaced, upstanding, link forming members arranged in cooperating paired relation, with each said pair of link members pivoted on a common support pin projecting outwardly of the bracket member, spring means urging the cradle members toward a closed side by side position, pivotally mounted spring urged shell cracking knife blades pivotally mounted for movement along opposed edges of the cradle members, a single clamping bar member mounted on the outboard end of a pivoted support arm so as to extend above said cradle members, spring means urging said clamping bar toward a position to engage the top surface of the shell of an egg positioned on the cradle members with the long axis in a plane generally normal to the plane of the cracking knife blades, and cam means for moving said cradle members between open and closed positions, which cam means is in the form of a small cam plate disposed between the opposed inner edges of the cradle support members and which is mounted for rotation on a vertical axis, said cam plate being of a size and configuration to swing the cradle members apart upon predetermined rotation about said vertical axis and to releasably lock the cradle members when said cradle members are in a fully open position.

4,321,865

APPARATUS FOR TREATING NUTS OR THE LIKE

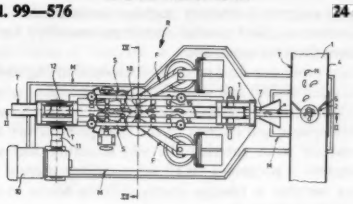
Roland Ramseier, Dällikon, Switzerland, assignor to Widmer & Ernst AG, Wettingen, Switzerland

Continuation-in-part of Ser. No. 881,962, Feb. 27, 1978, abandoned. This application Apr. 4, 1980, Ser. No. 137,252

Claims priority, application Switzerland, Feb. 27, 1980, 1557/80

Int. Cl.³ A23N *5/00*

U.S. Cl. 99—576 **24 Claims**



1. An apparatus for shelling nuts or the like comprising:

transport means including means for separating and aligning said nuts;

conveyor means downstream of said transport means for receiving the separated and aligned nuts, said conveyor means including a pair of spaced apart conveyor belts; and

first and second milling discs disposed opposite each other in overlapping relationship and at substantially the same distance dowwnstream of said transport means within the space formed by said pair of conveyor belts, said first and second milling discs each being provided with a cutting ring on the circumference thereof, said first and second milling discs being vertically displaced with respect to each other within said sapce wherein the distance between the axes of rotation of said first and second milling discs is less than the sum of the radii of said first and second milling discs such that both of said first and second milling discs cut the shell of the nuts simultaneously, said first and second milling discs being provided with an annular shoulder displaced radially with respect to said cutting ring for controlling the depth of the cut wherein the depth of the cut is less than the thickness of the shell of said nuts.

4,321,866

BREATHER BAG APPARATUS

Andy L. Thompson, Rte. 2, Courtland, Kans. 66939

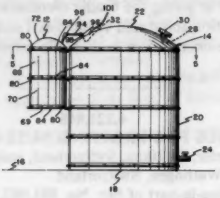
Filed Nov. 6, 1980, Ser. No. 204,458

Int. Cl.³ A01F *25/14, 25/22*

U.S. Cl. 99—646 S **7 Claims**

1. A breather bag apparatus connected to a material storage structure operable to allow for expansion and contraction of gases in the storage structure, comprising:

(a) a bag assembly having a flexible bag member that expands and contracts under gaseous pressures;
(b) a bag mounting assembly secured to the storage structure and surrounding said bag member in a protective manner;
(c) a conduit connector assembly connected at one end to said bag member and at another end to the storage structure to provide free flow of gases therebetween;
(d) said conduit connector assembly having a conduit member with a main body that is inclined downwardly from said bag member toward the storage structure whereby any fluids condensed in said main body flows into the storage structure;



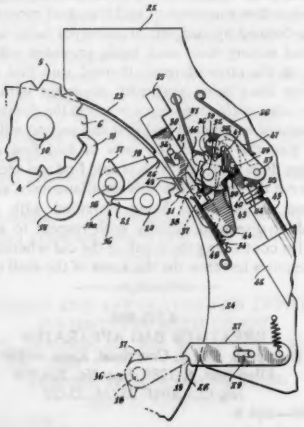
(e) said bag mounting assembly including a support connector member and a protector shell member connected to said support connector member;
(f) said support connector member connected to said bag member and said conduit connector assembly for flow of gases therebetween; and
(g) said protector shell member encloses said bag member on all sides thereof and wherein said bag member acts similar to a diaphragm member to equalize pressures between the atmosphere and interior of the storage structure and prevent air from entering the silo structure and said bag member is protected on all sides and top thereof but said bag member is readily observed from below to monitor condition thereof.

4,321,867

ELECTRO-MECHANICAL LATCH APPARATUS

John H. Soderberg, Monroe, N.Y., and Leonard M. Penque, Huntington, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 14, 1981, Ser. No. 225,083
Int. Cl.³ B41J *1/22*
U.S. Cl. 101—91 **4 Claims**



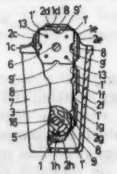
1. An electro-mechanical latch apparatus which comprises:
a first latch mounted for linear movement in a support structure, and spring-biased in one direction;
a second latch rotatably mounted on said support structure, having a lockpin and a slot on one side of the rotation shaft, and an edge engaged with the first latch on the other side thereof;
an electrical pulse means having a shaft which is retractable into and out of said pulse means in response to an electrical signal;
a link assembly mounted on said pulse means shaft and movable linearly when the pulse means is energized, said link assembly comprising:
a first link mounted on said pulse means shaft having
a pin which is positioned in the slot of said second latch;
a second link rotatably mounted on said first link, and spring-biased ro rotate toward said second latch, the second link having an angled end;
a third link rotatably mounted on the support structure and spring biased to rotate toward said link assembly, and having a first arm angled at the end thereof;
a toothed wheel having an edged cam affixed to the back thereof, rotatably mounted on the same axis of rotation as said second latch, wherein said edged cam contacts third link, and wherein the teeth of the wheel are engagable with the angled end of said second link of the link assembly when the pulse means shaft is retracted;
wherein, when said latch apparatus is in a first rest position, the edged cam forces said third link away from the lockpin of the second latch and the first latch rests in its biased position, and
wherein, when the pulse means is energized a first time and said shaft retracts, the link assembly rotates the second latch, and the toothed wheel and edged cam, and moves the first latch against its bias, and permits the third link to rotate as biased, such that the angled end of the first arm thereof slides over and locks the lockpin of the second latch, thereby producing a second rest position wherein the first latch is locked beyond its biased position; and
wherein when the pulse means is energized a second time the apparatus returns to its first rest position.

4,321,868

ROTARY TYPE RUBBER STAMP

Naokazu Kikuchi, 6-6 Higashi-jujo 5-chome, Kita-ku, Tokyo, Japan

Filed Nov. 14, 1979, Ser. No. 93,980
Claims priority, application Japan, Oct. 18, 1978, 53-143140
Int. Cl.³ B41J *1/32*
U.S. Cl. 101—111 **1 Claim**



1. In a rotary type rubber stamp, comprising a case, an endless rubber stamp belt disposed to run over a rotatable square guide pulley and a rotatable circular guide pulley each mounted on a shaft in spaced relationship within the case, said stamp belt comprising a plurality of unit stamp portions with letter molds projectingly formed thereon and a relatively thin hinge portion between each of said unit stamp portions, the improvement comprising said case having substantially rectangular cross-sectional shape being closed at one end and open at the other end, said pulleys being mounted on central shafts rotatably mounted at their ends in bearing holes in the side walls of said case, said square guide pulley having substantially

flat ends and being positioned at said open end of said case with said flat ends in close proximity to the inner surface of said side walls, and means for releasably retaining said unit stamp portions in stamping position comprising a circular groove in the inner surface of each side wall concentric with the rotational axis of said square guide pulley shaft, a plurality of recesses in said grooves, and projections on said flat ends of the square guide pulley positioned at the same radius as said recesses to engage said recesses, said projections on each said flat end corresponding in number to said recesses in the adjacent side wall, the shaft of said circular guide pulley is provided with an extension which extends through said side wall, a handle mounted on said extension for rotating said circular guide pulley and thereby said square guide pulley through said endless belt; and each unit stamp portion, when in position for stamping, is exposed through said open end of said case on one face only of said square pulley and the other unit stamp portions are substantially completely contained within said case.

4,321,869

DEVICE FOR DRIVING OR SYNCHRONIZING CYLINDERS IN OFFSET PRINTING PRESSES

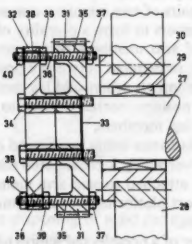
Willi Jeschke, Heidelberg; Hugo Rambausek, Wiesloch, and Paul Schilling, Neckargemünd, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany

Filed Jul. 2, 1979, Ser. No. 53,802

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1978, 2829026

Int. Cl.³ B41F *13/14, 7/06, 7/10*

U.S. Cl. 101—136 **4 Claims**



1. Drive for cylinders of an offset printing machine having a plurality of cylinders mounted on respective drive journal shafts and disposed in serial arrangement and a gear train formed of helically toothed, meshing spur gears respectively mounted on each of the journal shafts of the cylinders and having respective gear rims at the peripheries thereof, comprising a clamping plate disposed coaxially to at least one of the spur gears in fixed relationship thereto and spaced from at least a part thereof in axial direction of the one spur gear, a plurality of clamping devices mounted on said clamping plate, said clamping devices being engageable with the one spur gear and rotatable therewith, and means operatively connected with said clamping devices for adjusting said clamping devices in said axial direction so as to exert force in said axial direction upon the gear rim of the one spur gear for deforming the gear rim on the one spur gear, whereby rotation of the cylinder associated with the one spur gear is synchronized with that of the other cylinders of the printing machine.

4,321,870

CONTROLLING INK DIFFUSION IN WATERCOLOR COPYING

Barbara S. Zasloff, 14431 Woodcrest Dr., Rockville, Md. 20853

Continuation-in-part of Ser. No. 10,490, Feb. 8, 1979, abandoned, Continuation-in-part of Ser. No. 36,296, May 7, 1979, abandoned. This application Dec. 21, 1979, Ser. No. 106,006

Int. Cl.³ B41M *5/06;* C08L *5/12*

U.S. Cl. 101—473 **9 Claims**

4. A planographic printing plate comprising an agar matrix containing an aqueous liquid and constituting a gel having pores of a size sufficient to prevent migration of dye molecules therethrough,

said matrix containing additionally a surfactant selected from the group consisting of anionic or cationic surfactants,

said planographic plate having inked lines or designs thereon,

said ink comprising a water soluble dye selected from the group consisting of anionic or cationic dyes,

wherein when the surfactant is cationic the dye is anionic, and

when the surfactant is anionic the dye is cationic.

4,321,871

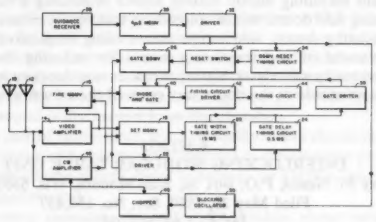
TARGET DETECTING DEVICE

Erwin I. Abadie, Houston, Tex.; John O. Dick, Riverside, and Howard M. Forrester, Corona, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 24, 1968, Ser. No. 725,262

Int. Cl.³ F42C *13/04*

U.S. Cl. 102—214 **3 Claims**



1. In a target detecting device of the passive type for use in a guided missile:

(a) signal receiving means for receiving pulsed and continuous wave signals from radiating targets for producing negative and positive output pulses and positive and negative dc signals,

(b) missile guidance circuit means for receiving signals from radiating targets and producing output signals representing the pulse repetition rate of the target radar of interest,

(c) an "and" gate circuit having a plurality of inputs and an output,

(d) chopper-amplifier circuit means coupled to said signal receiving means and to said missile guidance circuit means for producing an output pulse signal having the same pulse repetition rate as the signal received by said missile guidance circuit means,

(e) first gate signal generating means having a first input coupled to said signal receiving means, a second input coupled to said chopper-amplifier circuit means and having an output coupled to one of the inputs of said "and" gate for generating a first gate signal in response to received negative pulses at either of said first and second inputs,

(f) second gate signal generating means having a first input coupled to said signal receiving means, a second input

coupled to said chopper-amplifier circuit means and having an output coupled to one of the inputs of said "and" gate for generating a second gate signal in response to received negative pulses at either of said first and second inputs,

(g) third gate signal generating means coupled to said missile guidance circuit and to one of the inputs of said "and" gate for generating a gate signal in response to the guidance signal representing the pulse repetition rate of the target radar of interest,

(h) firing circuit means coupled to the output of said "and" gate and being responsive to an output signal from said "and" gate when all three gate signals are simultaneously present to initiate a firing signal.

4,321,872

AUTOMATIC HOPPER UNLOADING DEVICE

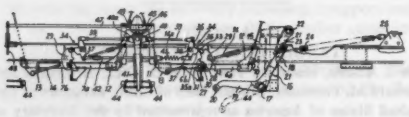
Edgard H. Caillier, 59263 Houplin, Ancoisne, France

Filed Oct. 6, 1978, Ser. No. 949,114

Claims priority, application France, Oct. 7, 1977, 7730211

Int. Cl.³ B61D *7/04, 7/18, 7/32*

U.S. Cl. 105—241.2 **15 Claims**



1. A bottom discharge hopper car having a body, a pair of doors pivotally mounted to the bottom of the car body to swing open therefrom, translating means coupled to said pair of doors and moving in response to the opening thereof, return means including elastic biasing means producing a force for closing said doors, means connecting said return means to said translating means, said return means being responsive to the movement of said translating means for reducing the force provided by said elastic biasing means as said doors swing open to a point where the doors stay open of their own weight.

4,321,873

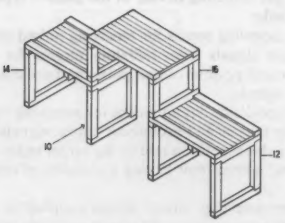
INTERLOCKING MODULAR TABLE UNIT

Perry M. Nealis, P.O. Box 36, Blue Mounds, Wis. 53517

Filed May 29, 1980, Ser. No. 154,437

Int. Cl.³ A47B *7/02*

U.S. Cl. 108—91 **10 Claims**



1. A generally rectangular modular table unit having a pair of sides and a pair of ends comprising:

a pair of generally horizontal side bars (30, 32) disposed along the sides of the unit;

a planar member (44) positioned between the side bars (30, 32) forming a top for the unit;

a pair of generally vertical legs (20, 22) at each end of the unit, each of the legs (20, 22) positioned under an end of one of the side bars (30, 32); and

a top and bottom cross bar (24, 26) at each end of the unit, each cross bar (24, 26) positioned horizontally across the respective end of the unit extending between the legs (20, 22) at that end, each of the cross bars (24, 26) having formed on one face thereof a pair of rabbetted recesses (28), each recess (28) located at an end of the respective cross bar (24, 26), and each of the cross bars (24, 26) being fastenable to the adjacent legs (20, 22) in one of two configurations, one configuration being with the recesses (28) oriented downwardly so as to form an interlocking structure to aid in stacking the units, the other configuration being with the recesses (28) oriented upwardly so as to form a structure adapted for standing alone.

4,321,874

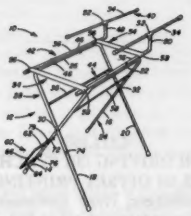
MUSIC STAND

John J. Cenna, III, 332 Dunbar Dr., Pittsburgh, Pa. 15235

Filed Jan. 28, 1980, Ser. No. 115,934

Int. Cl.³ G10G *5/00;* **A47B** *43/00*

U.S. Cl. 108—99 **9 Claims**



1. A music stand for supporting musical instruments and instrument accessories comprising,

a frame including a plurality of leg members adapted to engage a floor and extend upwardly from the floor,

said leg members being pivotally connected to permit movement of said leg members between a collapsed position and an erect position,

a plurality of pairs of arm members connected to said respective leg members to form a plurality of support platforms, said pairs of arm members being movable with said leg members for movement between a position for supporting musical instruments when said leg members are erect and a collapsed position corresponding to the collapsed position of said leg members,

said support platforms being positioned one above the other and spaced vertically a preselected distance apart,

flexible means attached to said arm members of at least one of said support platforms for maintaining said frame in an erect position,

a brace member of a preselected length adapted to move into and out of position extending between and connecting said leg members to rigidify said leg members in an erect position, and

said brace member being operable to rigidify said leg members in an erect position so that said respective pairs of arm members are spaced a preselected distance apart to position said support platforms to receive selected musical instruments and instrument accessories in a predetermined arrangement for playing of said instruments on the stand and to permit freedom of movement of said instruments to selected positions on the stand.

4,321,875

SUPPORT STRUCTURE

Peter J. Danko, 408 Gibbon St., Alexandria, Va. 22314

Filed Nov. 20, 1979, Ser. No. 95,943

Int. Cl.³ A47B *13/02*

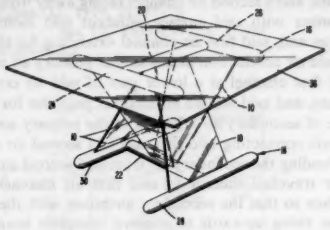
U.S. Cl. 108—150 **18 Claims**

1. A furniture support structure comprising:

(a) an upper support assembly;

(b) a lower floor engaging support assembly;

(c) an even number of panel-like members formed of single planar sheets, said number being at least four, said panel-like members being affixed to said upper and lower support assemblies with alternate pairs of said panel-like



members converging with respect to said upper support assembly and alternate pairs of said panel-like members converging with respect to said lower support assembly so that adjacent sheets converge in different directions, said panel-like members providing the sole support for the upper support structure.

4,321,876

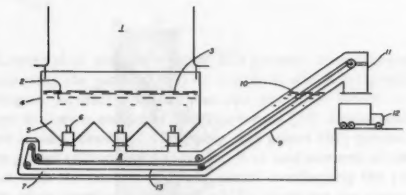
SYSTEM FOR THE REMOVAL OF ASH

William S. Mikus, Granby; Anthony J. Cozza, West Hartford; Harold E. Collins, II, Enfield, all of Conn., and Gerald A. Mellinger, Noblesville, Ind., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 19, 1980, Ser. No. 122,384

Int. Cl.³ F23J *1/02, 1/00*

U.S. Cl. 110—171 **4 Claims**



1. A structure for disposing of solid residue material from a combustion process including,

a combustion chamber in which solid residue material gravitates from the walls toward the bottom of the chamber,

a first structure for impounding a pool of liquid mounted at the bottom of the combustion chamber to receive the solid residue material,

a first pool of liquid within the first impounding structure and having a predetermined depth,

a second structure for impounding a pool of liquid mounted below the first impounding structure and connected to the first impounding structure through an opening in the bottom of the first impounding structure,

a second pool of liquid within the second impounding structure arranged to receive the solid residue material from the first pool of water,

means for liquid sealing the opening in the bottom of the first impounding structure through which the residue passes from the first pool to the second pool,

and a mechanical conveyor mounted in the second impounding structure and arranged to receive the solid residue material discharged from the first pool and transport the solid residue material to a station above the level of the pool surfaces.

4,321,877

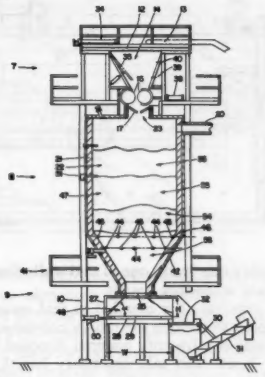
GASIFICATION FURNACE

H. Dean Schmidt, Sylvania, and Peter M. Eckstrom, Toledo, both of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Division of Ser. No. 945,248, Sep. 25, 1978, abandoned. This application Dec. 21, 1979, Ser. No. 106,334

Int. Cl.³ F23N *5/18*

U.S. Cl. 110—186 **7 Claims**



1. A furnace, comprising:

(a) a vertically elongated treatment chamber which is sealable from the ambient atmosphere, the chamber having a vertically uppermost entrance opening through which material, to be treated, is charged to the chamber, and a vertically lowermost exit opening through which treated material is discharged from the chamber;

(b) a pair of rollers positioned vertically above the entrance opening such that material charged to the chamber passes between the rollers, prior to falling, by gravity, into the chamber; and

(c) means mounting the rollers for rotation about parallel axes; and

(d) means for rotating at least one of the rollers in a direction which feeds material into the chamber;

(e) means for moving at least one of the pair of rollers to and from the other of the pair of rollers;

(f) a charge hopper extending vertically above the the pair of rollers, the hopper directing material charged thereto into the chamber through the entrance opening and between the pair of rollers;

(g) means for reciprocating a wall portion of the hopper to facilitate passage of material through the hopper; and

(h) means for sensing material in the hopper and causing correlated rotation of the at least one roller, when the material reaches a certain level in the hopper.

4,321,878

SECONDARY HEARTH CREMATORY

William W. Segrest, 107 N. Wood Lake Dr., Maitland, Fla. 32751

Filed Jul. 7, 1980, Ser. No. 166,497

Int. Cl.³ F23G *1/00*

U.S. Cl. 110—194 **7 Claims**

1. A device for cremating bodies comprising:

a primary hearth of refractory material disposed to support the body;

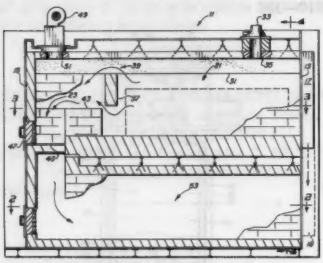
two refractory side walls of dense brick each connected to respective sides of said primary hearth;

a top member connected to said side walls and having a passage therethrough

a loading door coupled to the front of said primary hearth, sidewalls and top member and adapted to admit a body,

means for heating said primary hearth so that the body is partially consumed; thereby yielding products of consumption;

a secondary hearth of refractory material adapted to support the partially consumed body;



two secondary side walls, one of said walls disposed to each side of said secondary hearth;

a remains removal door coupled to said secondary hearth and adapted to remove the totally consumed body; and

a curtain wall of refractory material disposed between said primary hearth and said secondary hearth said curtain wall defining an upper and lower passage and;

guide walls angularly disposed between said primary and secondary hearth whereby a throat is formed between said primary and secondary hearth.

4,321,879

FURNACE FOR CONSUMING SOLID FUEL

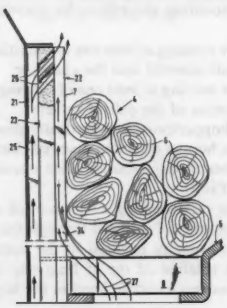
Auvo A. S. Toivo, Nahkurinkatu 3 A 27, 08100 Lohja 10, Finland

Filed Jun. 8, 1979, Ser. No. 46,929

Claims priority, application Finland, Jun. 12, 1978, 791776

Int. Cl.³ F23K *3/00*; F24B *7/00*

U.S. Cl. 110—267 **13 Claims**



1. A furnace for consuming solid fuel, comprising a fire chamber;

air conduction means proximate to said fire chamber for guiding air to be heated by said fire chamber therepast, said air conduction means including a surface and having an opening adjacent to said fire chamber;

inclined feed means associated with said air conduction means including a feeding channel for feeding fuel into said fire chamber and causing a layer of the fuel to be pressed against said surface so that the burning is even and distributed with carbon monoxide rising staight up and away through said air conduction means away from the feeding channel of the fuel;

said air conduction means includes a first air channel having said opening facing said fire chamber with said surface against which the fuel is pressed by said inclined feed means, and a second air channel facing away from said fire chamber with said surface adjacent said inclined feed means and, said first air channel extending for the length of said air conduction means so that primary air is led into said first channel at a lower part of said air conduction means, and said second air channel provides for the passage of secondary air adjacent to the primary air; and

air doors connecting said first and said second air channels for leading the secondary air from said second air channel after traversal thereof to said first air channel to said surface so that the secondary air mixes with the flow of gases rising upwards to achieve complete burning, the secondary air warms up behind said surface while cooling the part of said surface facing the fuel.

4,321,880

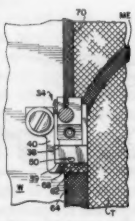
PRESSER FOOT ATTACHMENT

Ronald J. Boser, Dix Hills, N.Y., assignor to Union Special Corporation, Chicago, Ill.

Filed May 8, 1980, Ser. No. 147,986

Int. Cl.³ D05B *37/00, 35/06*

U.S. Cl. 112—127 **11 Claims**



6. A sewing machine for securing a tape to a workpiece comprising:

stitch forming instrumentalities including needle means the reciprocal path of which defines a sewing station;

work support means including throat plate means; an undertrimmer assembly located beneath the work support means in proximity to the needle for trimming the marginal edge of the workpiece simultaneously with advancement of same through the sewing station, said undertrimmer assembly including a movable blade which sweeps out a path the foremost parameter of which closely proximates the transverse plane of the needle means;

presser foot assembly means including main section means and an auxiliary section means adapted for movement between operative and non-operative positions, said auxiliary section means having an extension adapted when in its operative position, to seperate the workpiece from the tape to allow for the severance of the workpiece edge and serve to laterally guide the free edge of the tape to the sewing station.

4,321,881

METHOD AND APPARATUS FOR INSERTING A GUSSET IN PANTI-HOSE

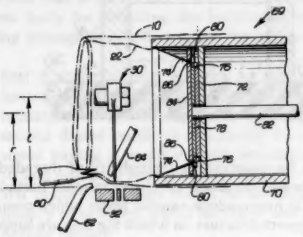
John C. Humphreys, 3 Cowper Rd., Burbage, Hinckley, Leicestershire, England

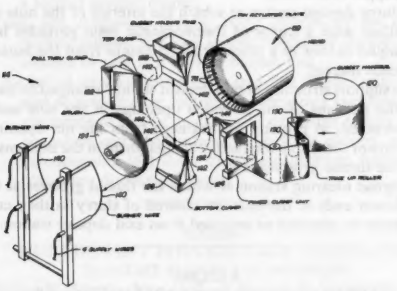
Filed Dec. 10, 1979, Ser. No. 102,125

Claims priority, application United Kingdom, Dec. 12, 1978, 48190/78; Sep. 12, 1979, 31577/79

Int. Cl.³ D05B *97/12, 21/00*

U.S. Cl. 112—262.2 17 Claims





1. A method of seaming a gusset to a garment characterised by supporting the garment (10) on a support which comprises an elongate member (70) open at one end onto which the garment is drawn and inner support means (74) displaceable relative to said member for gripping said gusset (22); presenting the gusset (22) to and supporting it at said one end of the support with the periphery of the gusset overlapping the periphery of an opening in the garment for receiving the gusset, said gusset being stretched at least in one direction to a preselected extent, and mechanically seaming the garment and the periphery of the gusset together while simultaneously rotating the gusset and the garment relative to a seaming machine and through at least 360° about an axis passing through the gusset to secure the gusset to the garment by a single continuous seam.

8. Apparatus for seaming a gusset to a garment characterised in that there is provided a support for receiving said garment, said support comprising an elongate support member (70) open at one end onto which the garment (10) is arranged to be drawn and inner support means (74) displaceable relative to said member (70) for gripping the gusset (22) so as to enable an opening in the garment to be brought into overlapping relationship with the periphery of the gusset; means (114) for presenting said gusset (22) to said inner support means (74) and stretching said gusset in at least one direction to a preselected extent; a seaming machine for seaming the gusset and the garment together, said support being displaceable relative to said machine to bring the machine into engagement with the garment and gusset, and wherein said support is rotatable relative to the seaming machine through an angle of at least 360° and about an axis arranged to pass through the gusset to enable the gusset to be secured to the garment by a single continuous seam.

4,321,882

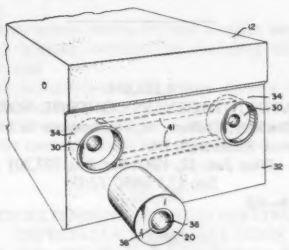
INTERCONNECTING SYSTEM FOR MARINE FLOATS

Wesley W. Sluys, Bellingham, Wash., assignor to Builders Concrete, Inc., Bellingham, Wash.

Filed Feb. 11, 1980, Ser. No. 120,368

Int. Cl.³ B63B *35/00*

U.S. Cl. 114—266 16 Claims



1. A system for interconnecting a plurality of marine floats arranged in an elongated row, comprising a pair of transversely spaced securing lines extending longitudinally through said floats with the ends thereof fastened to respective floats at the ends of the said row, said system further including a pair of resilient members received within respective abutting recesses formed in adjacent end walls of said floats having a shape which conforms to the shape of said resilient members, each of said resilient members having a longitudinally extending bore through which one of said securing lines passes, said resilient members having a length which is larger than the combined depth of the recesses formed in adjacent end walls, said floats being free of any rigid interconnection therebetween and any interconnection spaced apart from a transverse axis passing through said securing lines such that said resilient members resiliently space said end walls apart from each other and restrict transverse movement of said floats with respect to each other while allowing said floats to pivot with respect to each other.

4,321,883

SAFETY FLAG ATTACHMENT MEANS FOR BICYCLES, ETC.

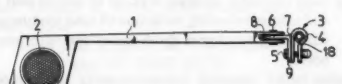
Juhani Ruppa, Keltinmäentie 25 C 39, SF-40630 Jyväskylä 63, Finland

Filed Oct. 1, 1979, Ser. No. 80,942

Claims priority, application United Kingdom, Aug. 2, 1979, 991038/79

Int. Cl.³ B60Q *1/34;* B62J *5/20*

U.S. Cl. 116—35 A 10 Claims



1. An attachment means for a safety flag having a stem and a reflector attached to one end of the stem, the attachment means comprising a fixing member for attachment to a vehicle, said fixing member consisting of a body made of a plastic material and bent double, its part bent double over each other and having been provided with apertures, said fixing member having a joint part, a joint member, said joint member having

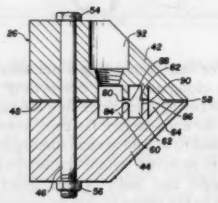
a mating part, an axle, said axle being through said apertures in said fixing member, said axle constitutes a screw with counterpiece, said screw and counterpiece also clamping said fixing member around the point of attachment to a part of the vehicle, said joint part of said fixing member and said mating part of said joint member being turnably connected by said axle and constituting bearing surfaces urging against each other for securing said joint member in desired position with references to said fixing member, the stem being pivoted to said joint member by the aid of a pivot axle and the axis of said pivot axle substantially crossing the axis of the turning axle.

4,321,884

COATING THICKNESS CONTROL NOZZLE

Harold K. Barkley, Colliers, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Jan. 22, 1981, Ser. No. 227,201
Int. Cl.³ B05C *11/06*
U.S. Cl. 118—63 15 Claims



1. In a coating apparatus in which a coating liquid is applied to an imperforate substrate in strip form by passing the substrate through a bath of the coating liquid, withdrawing the substrate upwardly from the bath with an excess of the coating liquid adhering to the surfaces thereof, then removing the excess coating liquid by passing the substrate between and in closely spaced relation to a pair of opposed nozzles and discharging a wide, thin jet of gaseous fluid under pressure from each such nozzle to impinge against the surfaces of the moving substrate to wipe excessive coating liquid from the substrate, the improvement wherein each such nozzle comprises,

a pair of elongated die members having their length dimension transversely of the length of the substrate, said die members being assembled together and cooperating to define an elongated nozzle body having an outlet opening extending at least substantially the full width of the substrate,

a plurality of separate plenum chambers formed in and extending longitudinally of said body between said die members, said plenum chambers each having a length substantially equal to the length of said outlet opening and extending in spaced, parallel relation to one another,

at least one inlet opening formed in one of said die members and communicating with one of said plenum chambers for admitting a gaseous fluid under pressure into said nozzle body,

said outlet opening communicating with another of said plenum chambers throughout substantially its full length, and

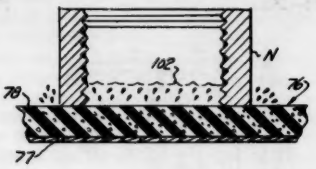
elongated, narrow fluid channel means extending between and providing fluid communication between successive plenum chambers throughout substantially their full length from said at least one inlet opening to said outlet opening, said fluid channel means being of substantially uniform cross-section throughout substantially their full length.

4,321,885

RING PATCH FOR NUTS

Richard B. Wallace, Bloomfield Hills, Mich., assignor to The Oakland Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 116,016, Jan. 28, 1980, Pat. No. 4,279,943. This application Apr. 23, 1981, Ser. No. 256,720
Int. Cl.³ B05D *7/22*
U.S. Cl. 118—102 28 Claims



1. Apparatus for supplying a multiplicity of threaded nuts with solid coherent deposits of thermoplastic particles in thread grooves at intermediate annular zones which comprises

horizontal support structure on which the nuts are supported with their axes vertical,

means for continuously advancing a series of nuts along said support structure,

a slurry deposit station at which the interior of the nuts are filled with a slurry of thermoplastic resin particles in a liquid carrier to a predetermined height from the bottom ends thereof,

the support structure at said deposit station arranged to leave the bottoms of the threaded openings in the nuts unobstructed, to provide for drainage from the nut openings except for slurry retained in shaped form in the bottoms of the thread grooves, and

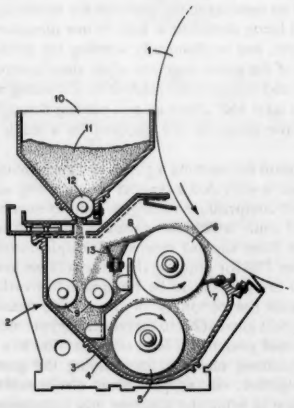
a thread clearing station at which the thread grooves at the lower ends of the nuts are cleared of slurry as they continue to advance as received from said deposit station.

4,321,886

APPARATUS FOR CONTROLLING TONER CONCENTRATION

Takashi Azuma, Ebina, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 12, 1980, Ser. No. 177,431
Claims priority, application Japan, Sep. 19, 1979, 54-120254
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—689 4 Claims



1. In an apparatus for controlling toner concentration of developer, consisting of a mixture of magnetic carrier and

toner, to produce an optimum toner concentration comprising: a toner supply hopper, a developer supply chamber, toner supply means for supplying the toner from said hopper to said developer supply chamber, a developer transporting means for transporting the developer from said developer supply chamber and applying it to a photoconductive member to form a visible image; a hollow body having an inlet and outlet, means for carrying said developer from said transporting means to said inlet to cause developer to flow through said hollow body from said inlet to said outlet; a detecting means carried by said hollow body for detecting the inductance of the developer passing through said hollow body, the improvement comprising:

a first digital oscillator coupled to said detecting means having an output frequency which is dependent upon the inductance of the developer sensed by the detectng means;

a second digital oscillator producing an output reference signal having a predetermined frequency corresponding to said optimum toner concentration;

a first frequency divider means for dividing the output frequency of said first digital oscillator and producing a first divider output;

a second frequency divider means for dividing the output frequency of said second digital oscillator and producing a second divider output;

said first frequency divider being cleared by the second divider output, and said second frequency divider being cleared by said first divider output; and

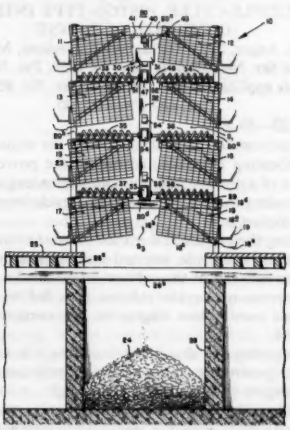
a control means responsive to said first divider output and said second divider output for energizing said toner supply means to supply toner to said developer supply chamber when said first frequency divider is cleared, and for de-energizing said toner supply means when said second frequency divider is cleared.

4,321,887

HIGH-DENSITY POULTRY CAGE SYSTEM AND MANURE HANDLING METHOD

Harlan W. Martin, New Holland; Harvey Z. Burkholder, Denver; Willis R. Voran, New Holland, and Galen A. Winters, Conestoga, all of Pa., assignors to Favorite Manufacturing, Inc., New Holland, Pa.

Filed Jan. 19, 1981, Ser. No. 226,497
Int. Cl.³ A01K *31/04*
U.S. Cl. 119—22 **35 Claims**



17. A high-density cage system, comprising:

at least a pair of upright frames disposed in spaced relation;

a bank of cages disposed in tiers extending between said frames in vertically-spaced relation and supported thereby;

each cage tier including a pair of cage rows disposed in horizontally-spaced relation to define gaps between the insides of the rows in each tier;

a dropping board located above each row in the lower ones of said tiers;

rail means supported by the frames and overlying the gaps between said cage rows;

carriage means movable along said rail means lengthwise of said cage rows;

means for displacing said carriage means along said rail means;

rotary blade means carried by said carriage means and extending laterally outward for overlying said dropping boards; and

means for rotating said blade means about a substantially horizontal axis;

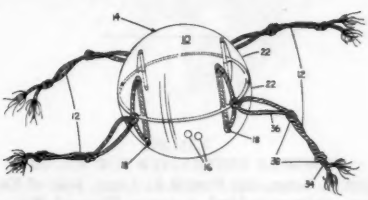
whereby the blade means displaces droppings on the dropping boards as the carriage means advances along the cage rows.

4,321,888

BALL WITH EXTENDING TETHERS SERVING AS A TOY ESPECIALLY FOR SMALL DOGS

Doris H. Topliffe, 1710 Brookside Ter., Tacoma, Wash. 98465

Filed Jul. 31, 1980, Ser. No. 173,975
Int. Cl.³ A01K *29/00*; A63B *39/00, 43/00*
U.S. Cl. 119—29 **3 Claims**



1. A ball with extending tethers serving as a toy, especially for small dogs, comprising:

(a) a ball, formed originally in two identical halves, each half having multiple integral cylindrical interior passageway embossments equally spaced, which when aligned with those like embossments of the other half, create watertight passageways, arranged as chord orientated openings, perpendicular to the geometric plane that is common to both halves, to receive and to secure extending tethers, and

(b) tethers threaded through the internal passageways of the ball and beyond and secured to serve as gripable tethers for small dogs to hold in their mouths.

4,321,889

LIVESTOCK LOADING DEVICE

Marcus H. Michaelsen, 106 Robin Rd., Council Bluffs, Iowa 51501, and Norman E. Dorn, 1215 Counts Rd., SE., South Solon, Ohio 43153

Filed Jan. 5, 1981, Ser. No. 222,464
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—82 **8 Claims**

1. A livestock loading device comprising:

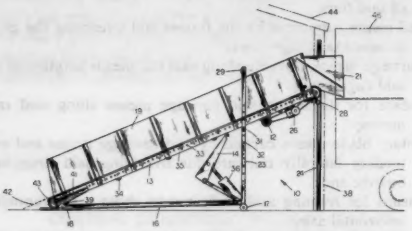
building means for containing livestock having a loading door;

wheeled frame means within said building means for movement towards and away from the loading door and having a first and a second end;

conveyor means having a first and a second end pivotally attached at its second end to the second end of said wheeled frame means and extending over and beyond the first end of said wheeled frame means;

drive means affixed to said conveyor means for selectively driving the belt of said conveyor means;

conveyor track means affixed to the jambs of the loading door for confining the movement of the first end of said conveyor means to a substantially vertical plane;



conveyor track engaging means affixed to the first end of said conveyor means for operation with said conveyor track means; and

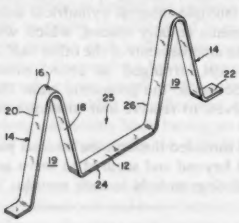
lift means connected between said frame means and said conveyor means for selectively raising and lowering said first end of said conveyor means.

4,321,890

SURGICAL RESTRAINER FOR ANIMALS

Richard L. Lange, and Randall L. Lange, both of Knoxville, Tenn., assignors to Mark Anderson, Elmwood, Wis.

Filed Nov. 24, 1980, Ser. No. 209,380
Int. Cl.³ A61D *3/00*
U.S. Cl. 119—96 **9 Claims**



1. A surgical restrainer for an animal, comprising:

an elongated structure having a central bottom band; and a pair of generally V-shaped inverted legs,

each of said legs having inner and outer side walls defining a loop therebetween to receive a forearm of said animal,

bottom ends of said inner side walls being joined with opposite ends of said band to define a cradle for said animal,

said band being long enough to receive the body of said animal in supine position between said legs with forearms of said animal engaged in respective loops of said legs to prevent said animal from rolling over during surgery and post-operative recovery, and

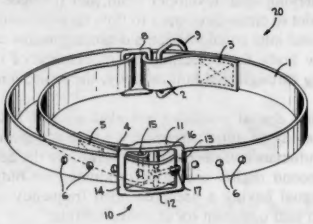
wherein said structure is sufficiently rigid so that said animal can be transported between a surgical table and recovery table while still engaged in said cradle.

4,321,891

ADJUSTABLE ANIMAL COLLAR

Romane G. Moeller, 311 Elm Cir., Colorado Springs, Colo. 80906

Continuation of Ser. No. 114,690, Jan. 23, 1980, abandoned. This application Mar. 2, 1981, Ser. No. 239,517
Int. Cl.³ A01K *27/00*
U.S. Cl. 119—106 **8 Claims**



1. An adjustable animal collar which is essentially continuous in construction, durable, easy to adjust, and which displays a reduced tendency to snag on external objects, the collar comprising,

a flexible strap formed of an elongated strip of generally continuous material,

a rectangularly-shaped O-ring, one end of said flexible strap being fixedly attached to a segment of said O-ring,

a one-piece hollow buckle means, the opposite end of said flexible strap being fixedly attached thereto, said buckle means including retaining means attached thereto capable of contacting said strap and preventing said strap from sliding with respect to said buckle means,

said strap, proceeding from its end connection to said O-ring, passing through the hollow area defined within said buckle means, then back through the hollow area defined within said O-ring, and finally to its opposite end connection to said buckle means, the point along the length of said strap where said retaining means contacts said strap thereby determining the loop diameter of the strap and thus the snuggness of its fit around the neck of the animal on which it is used.

4,321,892

MULTIPLE-CYCLE, PISTON-TYPE INTERNAL COMBUSTION ENGINE

Robert M. Anger, 3323 Konkle St., Kalamazoo, Mich. 49001

Division of Ser. No. 668,476, Mar. 19, 1976, Pat. No. 4,075,980. This application Nov. 14, 1977, Ser. No. 851,399
Int. Cl.³ F02B *75/20*
U.S. Cl. 123—59 EC **3 Claims**

1. In a process for generating power, the steps comprising:

(1) combusting non-recycled fuel in the power generating stroke of a 4-cycle internal combustion engine;

(2) expanding the exhaust from the 4-cycle internal combustion engine;

(3) feeding the expanded 4-cycled exhaust to the intake port means of a 2-cycle internal combustion engine during substantially all of the exhaust-intake stroke thereof;

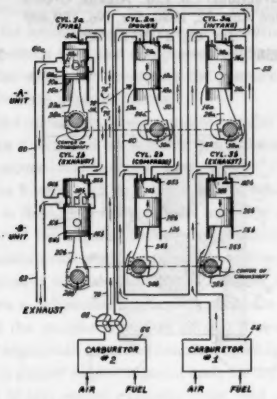
(4) compressing 4-cycle exhaust thus fed to said 2-cycle internal combustion engine in the compression stroke thereof;

(5) combusting the thus compressed 4-cycle exhaust in the power generating stroke of said 2-cycle internal combustion engine with all ports closed; and

(6) venting the combustion 4-cycle exhaust and thereby allowing it to expand in said 2-cycle internal combustion engine;

(7) the feeding of expanded 4-cycle exhaust into said intake port means during the exhaust-intake stroke acting to force expanded 2-cycle exhaust from said 2-cycle internal

combustion engine and in which two cylinders of said 4-cycle internal combustion engine operating substantially 180° apart feed exhaust gas to one unit 2-cycle cylinder of



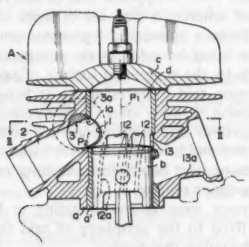
said 2-cycle internal combustion engine operating substantially 90° after said 4-cycle cylinders, whereby the exhaust of said 4-cycle cylinders alternately feeds the exhaust-intake stroke of the unit 2-cycle cylinder.

4,321,893

TWO-STROKE ENGINE HAVING VARIABLE EXHAUST PORT TIMING

Masahiro Yamamoto, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed Aug. 13, 1980, Ser. No. 177,581
Claims priority, application Japan, Aug. 17, 1979, 54/105267
Int. Cl.³ F02B 75/02; F02D 9/06
U.S. Cl. 123—65 PE **3 Claims**



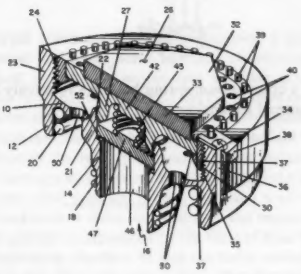
1. A two-stroke internal combustion engine comprising cylinder means having cylinder wall means formed with exhaust port means and scavenging port means each having a center, said cylinder wall means defining a cylindrical cavity having a central axis, piston means disposed in said cylinder means for movement so that the exhaust and scavenging port means are cyclically closed by said piston means, exhaust passage means communicating with said exhaust port means, scavenging passage means communicating with said scavenging port means for passing fresh charge of intake gas into the cylinder means when the scavenging port means is opened by the piston means, exhaust port timing control means provided in said exhaust passage means adjacent to said exhaust port means, said exhaust port timing control means including a rotary control member having a general configuration in which diametrical dimension is gradually decreased from one end toward the other end provide an external contour of an arcuate sectional configuration, said rotary control member having an axis inclined with respect to a line perpendicular to a line passing through the central axis of the cylinder means and the center of the exhaust port means so that said other end of the rotary control member is closer to the central axis of the cylinder means than the one end, said rotary control member being partially cut-off to conform in configuration to the exhaust passage means and being movable between a retracted position wherein the cut-off is aligned with the exhaust passage means and a projected position wherein an edge of the cut-off is projected into the exhaust passage means.

4,321,894

POPPET VALVE SPRING RETAINER WITH INTEGRAL MECHANICAL ADJUSTABLE TAPPET

Alfred A. Black, 126 Beaver St., #108, Farmingham, Mass. 01701

Filed Jul. 9, 1979, Ser. No. 55,951
Int. Cl.³ F01L 1/22
U.S. Cl. 123—90.54 **7 Claims**



1. A device for gap adjustment between a valve stem and its operation means within an internal combustion motor comprising:

a valve spring retainer member adapted to be retained upon said valve stem;

a first adjustment means incorporated into said valve spring retainer member for adjustment of said gap;

a lower valve spring retainer member having a valve stem receipt aperture defined therein;

a cap member;

means for adjustment of said cap member in relation to said valve spring retainer member for adjustment of said gap; and

a second adjustment means disposed above said valve stem receipt aperture for adjusting the gap between the top of said valve stem and said cap member and limiting the protrusion of said valve stem into said valve stem receipt aperture while allowing for the thermal expansion and reciprocating movement of said valve stem.

4,321,895

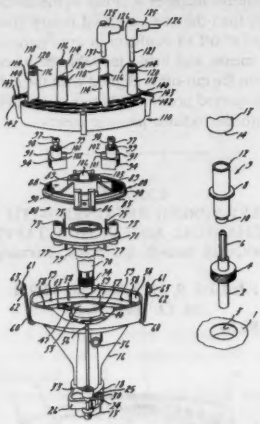
EXPANSION LIMITED SOCKET ASSEMBLY

David H. Fox, Ann Arbor, and Charles C. Kostan, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 14, 1979, Ser. No. 103,674
Int. Cl.³ F02P 7/02
U.S. Cl. 123—146.5 A **2 Claims**

1. In an ignition distributor employing a hollow tubular structure having a relatively high coefficient of thermal expansion mounted for rotational driving by an axially aligned metal member having a relatively low coefficient of thermal expansion, means surrounding a portion of said tubular structure and

said metal member to limit the cross-sectional expansion of said portion of said tubular structure, wherein said limiting means



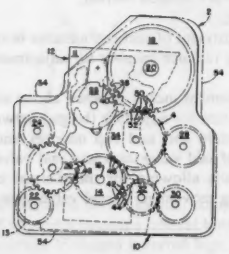
includes a compression spring having a relatively low coefficient of thermal expansion.

4,321,896

GEAR PLATE ASSEMBLY FOR MOUNTING AND POSITIONING AN ACCESSORY DRIVE TRAIN

Edward W. Kasting, Seymour, Ind., assignor to Cummins Engine Company, Columbus, Ind.

Filed Dec. 18, 1979, Ser. No. 104,914
Int. Cl.³ F02F 7/00
U.S. Cl. 123—195 A **11 Claims**



1. Apparatus for mounting an accessory gear train on the engine block of an internal combustion engine designed to be equipped with an accessory gear train, comprising

(a) a gear plate;

(b) primary shaft means for rotatably mounting a first gear in the gear train and for positioning said gear plate relative to the engine block at a fixed point along a first axis; and

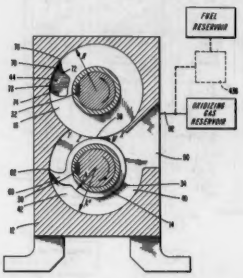
(c) secondary shaft means for rotatably mounting a second gear in the gear train and for fixedly positioning said gear plate relative to the engine block at a fixed point along a second axis.

4,321,897

INTERNAL COMBUSTION ENGINE

Emmanouil A. Pelekis, Athens, Greece, assignor to General Supply (Constructions) Co. Ltd., Athens, Greece

Filed Aug. 22, 1980, Ser. No. 180,309
Int. Cl.³ F02B 53/08
U.S. Cl. 123—238 **21 Claims**



1. Apparatus for combusting fuel with an expansible oxidizing gas to produce combustion gases, the apparatus comprising:

a housing having at least one chamber for combustion situated therein, and further including (a) intake means for admitting compressed oxidizing gas to said combustion chamber, and (b) exhaust means for releasing combustion gases from said combustion chamber;

compressor means for increasing the pressure of a mass of oxidizing gas including

(i) at least one first compressor rotor of circular cross section of radius r mounted for rotation in said housing,

(ii) a second compressor rotor of circular cross section of radius R mounted for rotation in said housing tangent to, and in fluid-tight relation with, said first compressor rotor, wherein the angular direction of rotation of said second compressor rotor is opposite that of said first compressor rotor, and wherein a first set of inner surfaces of said housing forms a cylindrical segmented compressor annular region being bounded at the compressor region segment ends by the peripheral surface of said second compressor rotor, said compressor region being gas-tight;

said combustion chamber intake means communicating with said compressor region proximate one compressor region segment end and having first valve means;

(iii) compressor inlet means for admitting oxidizing gas to said compressor region;

(iv) compressor vane means including at least one vane member fixed to the periphery of said first compressor rotor for rotation therewith,

(v) compressor vane relief means including at least one notch formed in the periphery of said second rotor cooperating with said compressor vane means for providing rotation of said compressor vane means past said second compressor rotor,

said compressor vane means being in sealing engagement with said first set of inner surfaces during rotation of said compressor vane means through said compressor region, the mass of oxidizing gas being confined within the portion of said compressor region between said compressor vane means and the peripheral surface of said second compressor rotor proximate one compressor segment end, the pressure of the confined mass of oxidizing gas increasing with the decrease in arcuate length and volume of said compressor region portion with the rotation of said compressor vane means, said compressor vane member having a face oriented toward the confined mass of oxidizing gas and said compressor notch including an axial edge for slidingly engaging said compressors vane member face in

the vicinity of said intake means, the mass of oxidizing gas undergoing pressure increase being sealed off from said compressor vane relief notch by said compressor vane means in the vicinity of said intake means;

means for introducing fuel into said combustion chamber for combustion with said compressed oxidizing gas; and

expander means for decreasing the pressure of the mass of combustion gases including:

(i) at least one first expander rotor of circular cross section of radius r' mounted for rotation in said housing;

(ii) a second expander rotor of circular cross section of radius R' mounted for rotation in said housing tangent to, and in fluid-tight relation with, said first expander rotor, wherein the angular direction of rotation of said second expander rotor is opposite that of said first expander rotor, wherein a second set of inner surfaces of said housing forms a cylindrical segmented expander annular region with the peripheral surface of said first expander rotor, said segmented expander annular region being bounded at the expander region segment ends by the peripheral surface of said second expander rotor, said expander region being fluid-tight, said combustion chamber exhaust means communicating with said expander region at one expander region segment end and having second valve means;

(iii) expander vane means including at least one vane member fixed to the periphery of said first expander rotor for rotation therewith;

(iv) expander vane relief means including at least one notch forming in the periphery of said second rotor cooperating with said expander vane means for providing rotation of said expander vane means past said second expander rotor, and

(v) expander exit means for releasing expanded combustion gases from said expander region,

said expander vane means being in sealing engagement with said second set of inner surfaces during rotation of said expander vane means through said expander region, the mass of combustion gases being confined within the portion of said expander region between said expander vane means and the peripheral surface of said second expander rotor proximate one expander segment end, the pressure of the confined mass of combustion gases decreasing with the increase in arcuate length and volume of said expander region portion with the rotation of said expander vane means, said expander vane member having a face oriented toward the confined mass of combustion gases and said expander notch including an axial edge for slidingly engaging said expander vane member in the vicinity of said exhaust means, the mass of combustion gases undergoing a decrease in pressure being sealed off from said expander vane relief notch by said expander vane means in the vicinity of said exhaust means, wherein each of the respective vane means includes two vane members positioned diametrically opposed on the respective first rotors and wherein each of said vane relief means includes two notches positioned diametrically opposed on the respective second rotors, the apparatus further comprising respective coupling means for providing dependent rotation of the respective first and second rotors, each of said notches being in registration with the respective vane member during rotation of the respective first and second rotors.

4,321,898

INTERNAL COMBUSTION ENGINE WITH TEMPERATURE CONTROLLED COMBUSTION CHAMBER WALLS

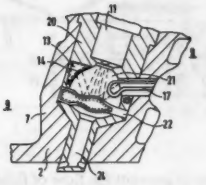
Reinhard Latsch, Vaihingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 946,224, Sep. 27, 1978, abandoned. This application Sep. 4, 1980, Ser. No. 183,910

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 2751156

Int. Cl.³ F02B *19/16*

U.S. Cl. 123—254 **1 Claim**



1. An internal combustion engine comprising a main combustion chamber and an adjacent auxiliary combustion chamber, a first heat pipe means within said auxiliary combustion chamber including an inner wall and having at least one closed hollow chamber disposed adjacent to a normally cooled part of the engine such that said first heat pipe means defines at least a selected portion of the wall of said auxiliary combustion chamber, further having a structure mounted such that the structure retains a vaporizable medium against the inner wall of the at least one closed hollow chamber; whereby the temperature of said selected portion is influenced by the flow of heat from said auxiliary combustion chamber to said normally cooled part of the engine via said first heat pipe means, thereby maintaining the temperature of said selected portion of the wall of said auxiliary combusion chamber higher than the temperature of the remaining portions of the auxiliary combustion chamber walls; further comprising a second heat pipe means having a closed hollow chamber containing a vaporizable medium therewithin and disposed in said axuiliary combustion chamber and extending substantially transverse with respect to the direction of the fuel jet from an injection valve in an area below said first heat pipe, said second heat pipe means serving as a heating element and whose ends constitute the condensation region of said first heat pipe and are in contact with the normally cooled walls of said combustion chamber part of the engine, wherein said injection valve disposed to inject fuel into said combustion chamber is so placed as to direct fuel to impinge on said second heat pipe means and said selected portions of said combustion chamber; whereby the homogenization and ignitability of a resulting fuel mixture is improved.

4,321,899

FLUID DEVICE FOR VEHICLE FUEL CONSUMPTION ENHANCEMENT

Robert E. Morey, 18 Cumberland Rd., Hamilton Square, N.J. 08690

Filed May 8, 1980, Ser. No. 147,974

Int. Cl.³ F02D *11/08*

U.S. Cl. 123—319 **21 Claims**

1. A fluid device for vehicle fuel consumption enhancement comprising:

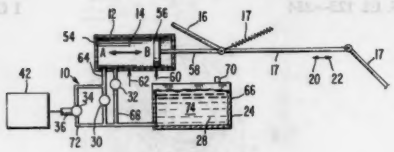
(a) a body defining a compressible chamber means therein connected to the vehicle throttle linkage, said chamber means adapted to be compressed directly proportional to movement of the vehicle throttle in the acceleration direction;

(b) fluid means located within said compressible chamber means and adapted to be expelled therefrom responsive to

movement of the vehicle throttle in the acceleration direction and the resulting compression of said chamber means;

(c) fluid bleed means positioned in fluid flow communication with the interior of said compressible chamber means and adapted to allow controlled release of said fluid means from said chamber;

(d) fluid return means positioned in fluid flow communication with the interior of said compressible chamber and adapted to allow return of the expelled fluid into said



chamber and to prevent the flow of fluid out of said chamber; and

(e) safety valve means positioned in fluid flow communication with the interior of said compressible chamber and adapted to allow instantaneous expelling of substantially all of said fluid means from said compressible chamber means responsive to the existence of greater than a predetermined force being exerted by said fluid means against said safety valve means outward from the interior of said chamber as a result of compressing of said chamber means.

4,321,900

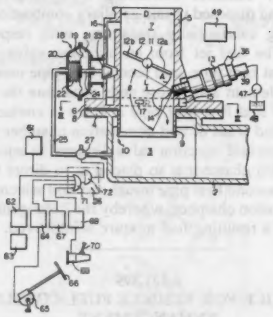
FUEL INJECTION TYPE INTERNAL COMBUSTION ENGINE

Keiso Takeda, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 12, 1979, Ser. No. 84,154

Int. Cl.³ F02D *1/04*

U.S. Cl. 123—339 **17 Claims**



1. A vehicle equipped with a fuel injection type internal combustion engine comprising:

an engine body;

an intake duct fixed onto said engine body and defining an intake passage therein;

a throttle valve arranged in said intake-passage;

a fuel injector having a fuel nozzle arranged in said intake passage;

bypass means communicating said intake passage located upstream of said throttle valve and said intake passage located downstream of said throttle valve;

a vacuum operated flow control device arranged in said bypass means and operated in response to changes in the level of the vacuum produced in said intake duct;

a vehicle cooling system;

a steering system having a steering handle; and

a torque converter having a manual control handle, wherein said vacuum operated flow control device comprises:

a diaphragm apparatus having a vacuum chamber connected to an inside of said intake duct via a vacuum conduit;

an electromagnetic valve arranged in said vacuum conduit;

a first switch cooperating with said throttle valve and turned to the ON condition when said throttle valve is in the idling position;

a second switch connected to said cooling system and turned to the ON condition when said cooling system is operated;

a third switch connected to said steering system and turned to the ON condition when said steering handle is turned to its extreme position;

a fourth switch turned to the ON condition when the temperature of said engine body is below a predetermined level;

a fifth switch connected to said torque converter and turned to the ON condition when said manual control handle is positioned at the auto-drive range; and

an electronic control circuit for actuating said electromagnetic valve in response to output signals of said first, second, third, fourth and fifth switches to establish a connection between said vacuum chamber and the inside of said intake duct when said first switch is turned to the ON condition and when at least one of said second, third, fourth and fifth switches is turned to the ON condition.

4,321,901

AUTOMATIC SPEED CONTROL DEVICE

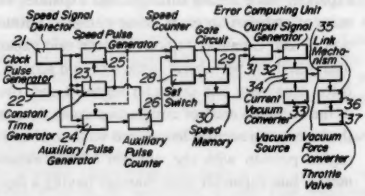
Kyoji Kobayashi, Chigasaki; Yujiro Tsutsui, Kamakura; Noboru Kaneko, Yokohama; Ekiro Hidaka; Kiyoshi Konishi, both of Fujisawa, and Toshio Iwaoka, Yokohama, all of Japan, assignors to Jidosha Denki Kogyo Kabushiki Kaisha, Yokohama, Japan

Filed Jul. 29, 1980, Ser. No. 173,246

Claims priority, application Japan, Aug. 3, 1979, 54-98695; Aug. 3, 1979, 54-98696

Int. Cl.³ G05D *13/62*; B60k *31/00*; F02D *11/10*

U.S. Cl. 123—352 **8 Claims**



1. An automatic speed control device comprising a speed signal detector means for generating speed pulses of a frequency proportional to a speed, a constant time generator means connected to the detector, a speed pulse counter means connected to the detector and the constant time generator for counting the speed pulse received within the constant time, an auxiliary pulse generator means connected to the speed signal detector and the speed pulse counter for generating auxiliary pulses of a constant period from the leading edge of each speed pulse, an auxiliary pulse counter means connected to the auxiliary pulse generator and the constant pulse generator for counting from the leading edge of each speed pulse auxiliary pulses of constant period sufficiently smaller than a period of the speed pulse at the highest speed, an actual speed computing means connected to both counters for operating an actual speed from the counted result of speed pulses at the end of the constant time and the counted result of the auxiliary pulses, a setting speed memory means connected to the actual speed computing means, a speed comparator means connected to the

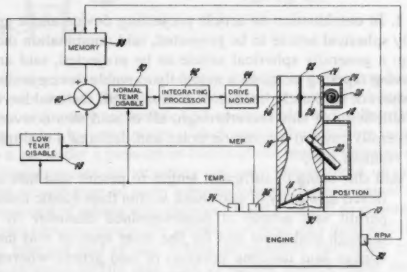
memory means and the actual speed computing means for comparing the actual speed and the setting speed thereby to generate an output signal corresponding to the difference thereof, and an electromechanical transducer means connected to receive the output signal of the speed computing means for driving an adjustable speed mechanism of a prime mover.

4,321,902

ENGINE CONTROL METHOD

Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 11, 1980, Ser. No. 139,429
Int. Cl.³ F02M *7/00, 51/00*
U.S. Cl. 123—435 **2 Claims**



1. The method of operating a combustion engine having a fuel supply passage and means for measuring a parameter indicative of the engine torque, said method comprising the steps of:

during engine operation at normal temperatures—recording the values of the parameter indicative of the engine torque produced for particular operating points,

and during engine operation at less than normal temperatures—providing the fuel flow through said fuel supply passage necessary to maintain the measured value of said parameter for each such operating point substantially equal to the recorded value for such operating point,

whereby the torque produced during engine operation at less than normal temperatures is maintained substantially equal to the torque produced during engine operation at normal temperatures.

4,321,903

METHOD OF FEEDBACK CONTROLLING AIR-FUEL RATIO

Toshio Kondo, Anjo; Akio Kobayashi; Tomomi Eino, both of Kariya, and Naofumi Fukue, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 6, 1980, Ser. No. 127,545
Claims priority, application Japan, Apr. 26, 1979, 54/51682
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—440 **4 Claims**

1. A method of controlling the air-fuel ratio of an internal combustion engine having a member affecting the air-fuel ratio comprising the steps of:

(a) sensing the oxygen concentration in the exhaust gases of said internal combustion engine;

(b) sensing an operating condition of said internal combustion engine;

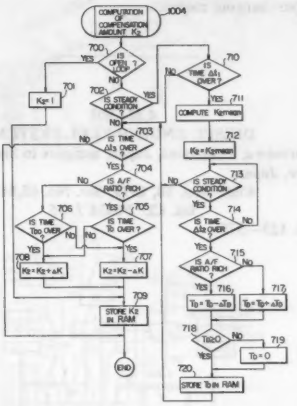
(c) when said sensed operating condition is changing,

(c1) incrementally changing a correction value in a direction the same as the previous incrementally changing step except for the first incrementally changing step following a delay interval from a passing of said sensed oxygen concentration through a predetermined value, said correction value being incrementally changed in a direction opposite the previous incrementally changing step during said first incrementally changing step, and

(c2) controlling said member using said calculated correction value;

(d) when said sensed operating condition is not changing,

(d1) averaging said correction value used to control said member in said controlling step (c2),



(d2) controlling said member using said averaged correction value during a predetermined interval, and

(d3) varying said delay interval in response to said oxygen concentration sensed after said predetermined interval by said sensing step (a); and

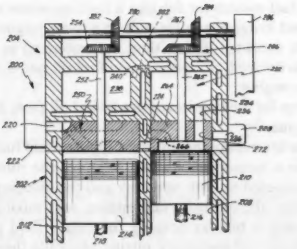
(e) repeating the above sequence of steps (a) to (d) using said varied delay interval in said calculating step (c1).

4,321,904

INTERNAL COMBUSTION ENGINE WITH AUXILIARY COMBUSTION CHAMBER

Robert D. Bristol, P.O. Box 337, Beulah, Mich. 49617

Continuation-in-part of Ser. No. 950,368, Oct. 11, 1978, Pat. No. 4,211,082. This application Mar. 17, 1980, Ser. No. 130,727
Int. Cl.³ F02B *33/00;* **F02D** *23/00;* **F02B** *75/04*
U.S. Cl. 123—559 **12 Claims**



1. In an internal combustion engine of the type including at least one power cylinder having a power piston reciprocating therein and which is connected to an output crank, a cylinder head defining a combustion chamber with the power cylinder and said power piston, said cylinder head also defining intake and exhaust ports, the engine further including valve means for controlling the intake of a charge through the intake port and the exhaust of combustion gases through the exhaust port, and supercharging means operatively connected to said intake port

for intaking, compressing and transferring a compressed charge to the intake port, the improvement comprises:

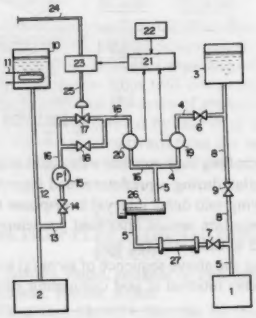
a charge expansion means communicating with said combustion chamber for defining an expansion chamber and for permitting the expansion of the combustion gases out of and in to the combustion chamber as the power piston moves towards bottom dead center so that an overcharge may be transferred to said combustion chamber by said supercharging means.

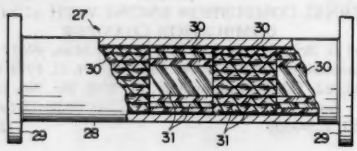
4,321,905

DIESEL ENGINE FUEL SYSTEM

Jiro Kurasawa, Yokohama, Japan, assignor to Showa Line Ltd., Tokyo, Japan

Filed Aug. 10, 1979, Ser. No. 65,547
Int. Cl.³ F02M 1/16
U.S. Cl. 123—575 **1 Claim**





1. A fuel system for feeding a homogeneous mix of higher-grade and lower-grade fuel oils to a diesel engine, comprising:

a tank mounted higher than the engine so as to permit the gravity feed of higher-grade fuel oil contained therein to the engine;

a pump for feeding lower-grade fuel oil from a source to the engine;

means for mixing the different types of said fuel oils together into a homogeneous fuel mixture, the inlet of which is connected to both said tank and the discharge side of said pump, the outlet to said engine, said mixing means comprising a tubular housing forming a fluid passage and a plurality of stationary mixing elements therein for dividing and mixing the fluid flowing through said passage, wherein each of said mixing elements is made up of a plurality of corrugated sheets stacked rigidly with their ridges at right angles to one another, and wherein said plurality of mixing elements are disposed in series with the stacks of said corrugated sheets of adjacent elements being oriented at right angles to each other; and

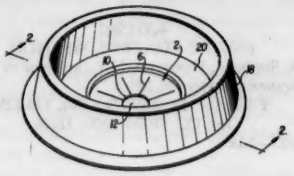
means for regulating the flow of said lower-grade fuel oil to said mixing means relative to the flow of said higher-grade fuel oil.

4,321,906

TOY PROJECTOR

Ernest L. Thornell, 853 W. Sixth St., Booneville, Ark.

Filed Apr. 8, 1980, Ser. No. 138,418
Int. Cl.³ F41B 7/00
U.S. Cl. 124—10 **6 Claims**



1. In combination an article projecting device and a generally spherical article to be projected, said combination including: a generally spherical article to be projected, said article having tapering portions, a manually movable device including a sheet of resiliently bendable relatively stiff material having a multiplicity of slits therethrough, all of said slits converging generally toward a common point and defining a multiplicity of resilient tabs;

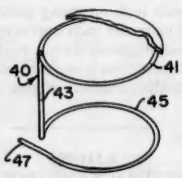
said slits being of sufficient length to permit said tabs to be flexed upwardly of said sheet, within their elastic limits, to permit said article of predetermined diameter to pass through said sheet and for the inner ends of said tabs to engage said tapering portions of said article whereupon resilient recovery of said tabs cams said tapering portions of said article and thereby project said article away from said projector.

4,321,907

CHARCOAL STARTER-BURNER

Richard A. Sutter, 7215 Greenway, University City, Mo. 63130

Filed Dec. 5, 1979, Ser. No. 100,517
Int. Cl.³ H47J 37/00
U.S. Cl. 126—25 B **8 Claims**



1. In a charcoal starter-burner having a tall, open ended, tubular housing, a grate intermediate its ends defining in one position of said grate, an upper, charcoal receiving chamber and a lower, ignition chamber, and holes through its perimeter at its lower end, the improvement comprising a shaft mounted chordally in said housing, a perforate grate hinged at one side to said shaft to swing about the axis of said shaft, and means for permitting relative movement of said grate axially of said housing at said axis, said grate being spaced inwardly from the inner wall of said housing, a leg connected to support said grate in charcoal-retaining position and a foot, adjacent the lower edge of said housing, connected to the lower end of said leg, said foot having a trigger part projecting beyond the periphery of said tubular housing, and latch means on said housing for engaging and holding said trigger in leg supporting position and for releasing said trigger in another position, said foot having a part extending transversely of said housing in the direction of the hinge side of said grate and substantially parallel with said grate in paper-retaining position adjacent the lower end of said housing, and said foot being arranged for

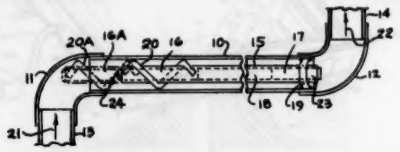
swinging free of the bottom edge of said housing when the said trigger is released.

4,321,908

PREVENTION OF FREEZE DAMAGE TO LIQUID CONDUITS

Robert S. Reed, 1204 Sunland Rd., Daytona Beach, Fla. 32019

Filed May 16, 1980, Ser. No. 150,297
Int. Cl.³ F24J 3/02
U.S. Cl. 126—420 **27 Claims**



1. An apparatus to prevent freeze damage to a pipe conducting a pressurized liquid which comprises an elongated linear section of linearly expansible and contractible, and collapsible tubing sealed by solid plugs at each end and containing internally a gas under a pressure in excess of the highest pressure of said liquid; means for attaching one said plugged end of said tubing to said pipe so as to prevent linear axial movement of said one end of tubing with respect to said pipe and to maintain said one end concentrically within said pipe; and means at the other plugged end of said tubing to maintain said other end concentrically within said pipe to permit limited linear axial expansion of said tubing with respect to said pipe.

4,321,909

SERVO-CONTROLLED SOLAR TRACKING APPARATUS

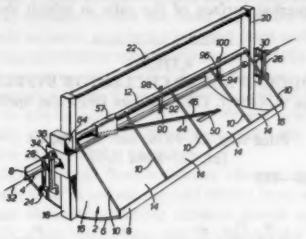
John M. Trihey, Ringwood, Australia, assignor to Vulcan Australia Limited, Victoria, Australia

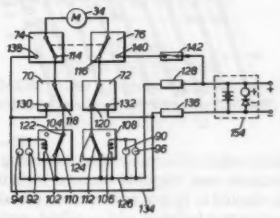
Continuation-in-part of Ser. No. 883,313, Mar. 3, 1978, which is a continuation-in-part of Ser. No. 704,674, Jul. 12, 1976, Pat. No. 4,089,323. This application Feb. 15, 1980, Ser. No. 122,054
Claims priority, application Australia, Jul. 11, 1975, PC2334; Apr. 21, 1977, PC9839; Feb. 23, 1979, PD7808; Aug. 23, 1979, PE0157; Aug. 23, 1979, PE0159
Int. Cl.³ F24J 3/02
U.S. Cl. 126—425 **35 Claims**

1. Solar conversion apparatus comprising: concentrating means for concentrating solar energy onto at least one surface; tracking means for causing the concentrating means to track the sun, said tracking means including radiation sensitive elements which are operable on differential thermal expansion thereof to generate tracking control signals and an electric motor for moving said concentrating means, said motor being responsive to said control signals; and over temperature sensing means operable to override said tracking means and cause the motor to move the concentrating means out of alignment with the sun.

3. Solar conversion apparatus comprising concentrating means for concentrating solar energy onto at least one surface, tracking means for causing the concentrating means to track the sun, said tracking means including first radiation sensitive elements which are responsive to thermal components of solar radiation and are operable to produce first control signals for initiating tracking movements of the concentrating means and at least one second radiation sensitive element which is responsive to non-thermal components of solar radiation and is operable to produce second control signals for arresting tracking movements of the concentrating means.

9. A method of collecting solar energy comprising moving solar energy concentrating means such that the concentrating means concentrates solar energy on a heat transfer surface; generating control signals by means of at least one element which is sensitive to infra-red components of solar radiation for initiating tracking movements of concentrating means toward alignment of the concentrating means with the sun; and generating an arresting signal by means of at least one element which is sensitive to visible or ultra-violet components of solar radiation for arresting tracking movements of the concentrating means when the concentrating means is correctly aligned with the sun.



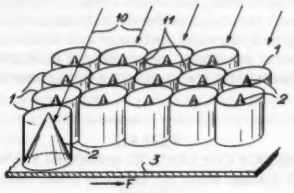


4,321,910

EMITTER-RECEIVER PANEL HAVING HIGH RADIANT ENERGY EFFICIENCY

Fernand M. Devienne, 117, Boulevard de la Croisette, 06400 Cannes, France

Filed Apr. 29, 1980, Ser. No. 144,914
Claims priority, application France, May 4, 1979, 79 11310
Int. Cl.³ F24J 3/02
U.S. Cl. 126—439 **12 Claims**



1. An emitter-receiver panel having high radiant energy efficiency, constituted by a heat-conducting metallic support plate on at least one face of which is provided an absorbent surface composed of metallic tubes in the form of right circular cylinders having axes at right angles to the surface and disposed on a uniform lattice, and by right circular metallic cones each placed within the interior of one of said tubes in the form of right circular cylinders, the base of each cone being located at the intersection of said cylindrical tube with said plate and the apex of each cone being located at a point within the interior of said cylindrical tube, the external surface of each cone being adapted to cooperate with the internal surface of the cylindrical tube within which said cone is located in order to trap the entire radiation received by said panel, the half angle

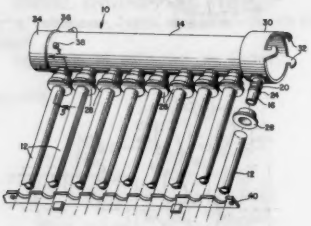
θ of the apex of each cone satisfying the expression $h-h' > d/2$ tangent θ, wherein h is the height of each of the right cylindrical metallic tubes, h' is the height of each of the metallic cones and d is the diameter of each tube, whereby each incident ray impinging upon the surface of one of the cones is reflected from the internal surface of the tube in which the cone is placed.

4,321,911

MODULAR SOLAR COLLECTOR SYSTEM

Worthington W. Offutt, 1251 Verbena Dr., Palm Springs, Calif. 92262

Filed Aug. 15, 1979, Ser. No. 66,681
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—448 **5 Claims**



1. A modular solar collector system comprising a plurality of manifold sections, said manifold sections including male and female ends adapted to fit into each other; a plurality of tubular collectors connected between said manifold sections; connecting means for connecting said collectors to said manifold; said connecting means including fittings on said manifold sections adapted to receive said tubular collectors; and annular locking means adapted to fit over said fittings and said collectors when they are connected; said fittings having a nipple shape and including two exterior surfaces of different heights, the junction of which forms an annular shoulder perpendicularly disposed to the axis of said nipple, the edge of which forms a peripheral sealing ring, one of said surfaces tapering downwardly toward the front of said nipple, said annular locking means having two inner tapering surfaces disposed at different angles relative to an axis of said locking means, an annular shoulder formed at the junction of said two inner surfaces and perpendicularly disposed to the axis of said annular locking means, and having a peripheral rim, said peripheral sealing ring of said nipple cooperating with the inner surface of said tubular collector to form a seal when said annular locking means is in place, and said annular shoulder on said annular locking means cooperating with the outer surface of said tubular collector to form a pressure junction to compress said collector tubes at a location adjacent said seal to insure a tight connection at that point.

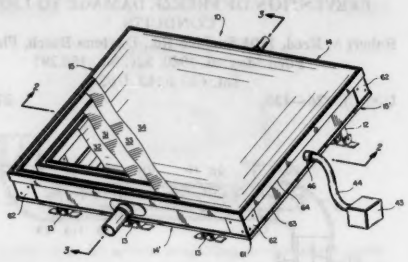
4,321,912

SOLAR ENERGY COLLECTOR ASSEMBLY AND FRAME

Raymond B. Larsen, Berth 32, Issaquah Dock, Sausalito, Calif. 94965

Filed Jul. 11, 1980, Ser. No. 167,421
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **10 Claims**

1. A frame assembly for a solar energy collector of the type including a flexible collector sheet, a layer disposed above said sheet in cooperative relationship with the sheet, a pair of layers disposed below said sheet with one in cooperative relationship with the sheet, said sheet and layers being substantially coextensive and parallel to one another, said frame assembly including sides comprising a first elongated rigid channel having upwardly extending sides and a groove along the upper surface of each of the sides, a second elongated channel having sides and a groove at the upper surface at each of said sides, said second channel being adapted to fit within the first channel, and means for supporting the second channel in space relationship with the first channel, said assembled channels providing space grooves each receiving the outer peripheral edges of said sheet and one of said layers to support the same in parallel



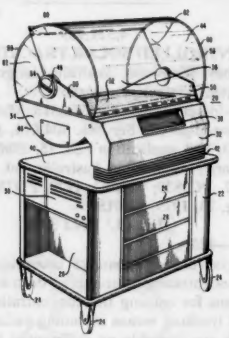
spaced relationship and securing means insertable in each of said grooves for releasably holding the edges of sheet and layers.

4,321,913

ISOLATION INCUBATOR

James Maluta, Minona; John H. Wasson, Portage, and Robert J. Koch, McFarland, all of Wis., assignors to Airco, Inc., Montvale, N.J.

Filed Jan. 8, 1980, Ser. No. 110,505
Int. Cl.³ A61G *11/00*
U.S. Cl. 128—1 B **21 Claims**



1. An infant incubator for providing a controlled environment for an infant, said incubator comprising a base section, an infant support adapted to underlie an infant, and a hood mounted to said base section and adapted to cover said infant support to enclose therebetween an infant compartment, said hood being cylindrical and comprising a plurality of sections concentrically and rotatably mounted about a common axis to said base section, said sections of said hood being rotatable to an open position providing access to said incubator compartment and to a closed position, each of said sections comprising an interior wall and an exterior wall in close proximity thereto, and having side walls, said interior and exterior walls of each section defining therebetween a passageway throughout said respective section of said hood, each said section having an inlet means and an outlet means communicating with said respective passageway, said inlet and outlet means of each said section providing a continuous flow path through said sections of said hood when said hood is in the closed position and heating means mounted in said base and communicating with said inlet means and outlet means of said respective sections of said hood adjacent said base when in said closed position for circulating heated air between said heating means and said

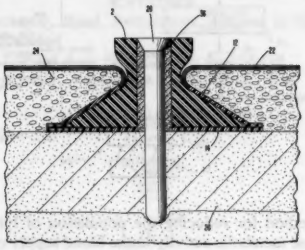
continuous flow path through said hood whereby heat from said circulated air is transferred to said hood.

4,321,914

PERCUTANEOUS CONDUIT HAVING PTFE SKIRT

Paul C. Begovac, and William C. Bruchman, both of Flagstaff, Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Apr. 22, 1980, Ser. No. 142,840
Int. Cl.³ A61B *19/00*; A61M *5/00, 25/00, 27/00*
U.S. Cl. 128—1 R **12 Claims**



1. A percutaneous device comprising:

A. a button made of a biologically inert, non-porous material, said button including a top wall having a continuously curved perimeter, a pinched-waist-shaped side wall and a bottom wall having a continuously curved perimeter of larger area than said top wall, said button being capable of providing a path from the exterior of the epidermal tissue to interior body spaces and structures,

B. an upper skirt and a lower skirt formed of expanded polytetrafluoroethylene having an open microstructure with a fibril length of 60 to 500 microns for the in-growth of epidermal and connective tissue,

(i) said upper skirt extending up the side wall from the perimeter of said bottom wall in laminar contact with said side wall to an elevation just below the minimum diameter of said pinched-waist-shaped side wall; and

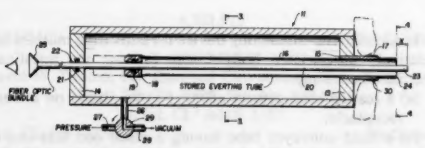
(ii) said lower skirt being in laminar contact with said bottom wall and connected to said upper skirt adjacent the perimeter of said bottom wall.

4,321,915

EVERTING TUBE DEVICE WITH RELATIVE ADVANCE CONTROL

Stephen B. Leighton, Silver Spring, and William H. Boyd, Hyattsville, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 52,110, Jun. 26, 1979, abandoned. This application Dec. 16, 1980, Ser. No. 217,143
Int. Cl.³ A61B *1/00*
U.S. Cl. 128—4 **11 Claims**



1. A method of inserting an elongated tool device having a front end into a body cavity through a body opening comprising

providing an elongated flexible fluid-impervious tubular element folded inwardly coaxially to form an initial inverted front end portion, the tubular element being connected at one end adjacent a front end of a housing and with a free end of the tubular element being disposed within the housing,

engaging said tool device substantially axially through the free end of said tubular element and through said flexible tubular element so that the front end of the tool device extends adjacent said initial inverted front end portion,

subjecting said flexible tubular element externally to positive fluid pressure within said housing to cause the tubular element to collapse about and thereby grip the tool device and to axially advance the tool device while simultaneously everting and advancing axially the front end portion of the tubular element,

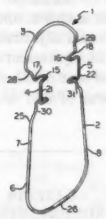
then subjecting said flexible tubular element externally to vacuum so as to release the tool device from said flexible tubular element, retracting the tool device axially rearwardly while maintaining said flexible tubular element in the same axial location, and again subjecting the flexible tubular element to external fluid pressure to repeat the advancement of the tool device.

4,321,916

EYELID RETRACTOR

Douglas C. McKee, 66289 Riverside Rd., Montrose, Colo. 81401

Filed Mar. 26, 1980, Ser. No. 134,066
Int. Cl.³ A61B *17/02*
U.S. Cl. 128—20 **15 Claims**



1. A speculum adapted for use in retracting eyelids during ocular operations comprising:

(a) a closed and one-piece loop; said loop being inelastically deformable by digital pressure exerted thereon by a doctor to a desired shape so as to conform to facial features of a patient and thereafter hold said shape against pressure exerted thereon by the eyelids; and

(b) a pair of blades opposingly positioned and connected with said loop; said blades being adapted for engaging the eyelids; said speculum having an eyelid retracting configuration wherein said loop is positioned relative to an eye such that eyelids associated with the eye are held apart by the blades.

4,321,917

SURGICAL DRAPE SUPPORT AND OXYGEN SUPPLY DEVICE

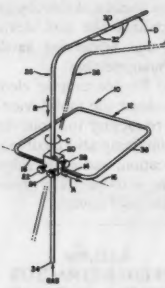
William H. Campbell, 1411 W. Fourth St., Coffeyville, Kans. 67337

Continuation-in-part of Ser. No. 40,087, May 17, 1979, abandoned. This application Jul. 23, 1980, Ser. No. 171,437
Int. Cl.³ A61M *16/02*
U.S. Cl. 128—205.26 **34 Claims**

1. In a surgical drape support device for use on a surgical operating table having a mattress thereon, said device having means defining a base member designed for resting upon said table and adapted to be retained thereon by the mattress and having a side portion thereof adapted to extend laterally from said mattress, and having a drape support means comprising a support rod slidably and rotatably secured to said base mem-

ber, and a drape arm connected to the upper end of said support rod substantially perpendicular thereto; the improvement comprising

a unitary adjustment means interconnected between said base member and said support rod; said adjustment means being mounted on said side portion of said base member such that said adjustment means is slidable in two directions along an axis defined by said side portion of said base



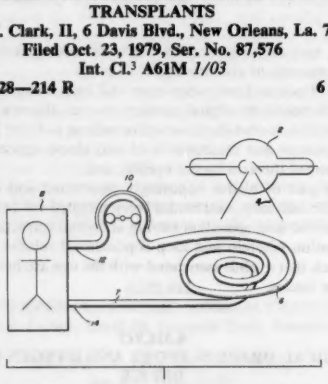
member and is rotatable in a plane normal to said axis thereof, at least two securing means cooperating with said adjustment means for adjustably securing said adjustment means to said base member and for adjustably securing said support rod to said adjustment means for providing at least four degrees of adjustment motion for said drape arm with respect to said base member from a position removed from the patient area of said table.

4,321,918

PROCESS FOR SUPPRESSING IMMUNITY TO TRANSPLANTS

William T. Clark, II, 6 Davis Blvd., New Orleans, La. 70121

Filed Oct. 23, 1979, Ser. No. 87,576
Int. Cl.³ A61M *1/03*
U.S. Cl. 128—214 R **6 Claims**



1. A process for inhibiting immunity to a transplant in a human patient undergoing rejection symptoms which comprises:

exchanging the patient's blood through an extracorporeal link,

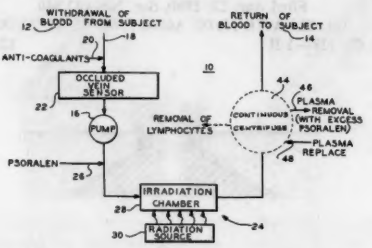
and irradiating the patient's blood while in transit through the link with a transit dose to significantly reduce lymphocyte function but less than that required to significantly diminish the patient's lymphocyte population until the rejection symptoms subside.

4,321,919

METHOD AND SYSTEM FOR EXTERNALLY TREATING HUMAN BLOOD

Richard L. Edelson, Roseland, N.J., assignor to Leukocyte Research, Inc., Detroit, Mich.

Filed Dec. 11, 1979, Ser. No. 102,553
Int. Cl.³ A61M *1/03*
U.S. Cl. 128—214 R **16 Claims**



1. A method for reducing the population of lymphocytes with intense metabolic activity in the blood supply of a human subject, comprising the steps of:

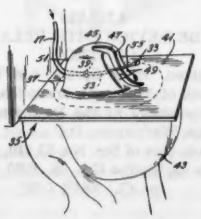
withdrawing whole blood from said subject, forming said whole blood into an extracorporeal stream, flowing said stream through a treatment station which comprises a thin chamber substantially transparent to UV radiation, irradiating said withdrawn whole blood in said treatment station with UV radiation in the presence of about 1 nanogram to 100 micrograms of a dissolved psoralen capable when activated by said UV radiation to effect chemical bonding between said psoralen and said lymphocytes, thereby selectively inhibiting the metabolic processes of said lymphocytes; and returning the irradiated whole blood to said subject.

4,321,920

PERISTALSIS STIMULATING DEVICE

H. E. Gillig, 1010 E. Atlantic Bl., Pompano Beach, Fla. 33060

Filed Jun. 3, 1980, Ser. No. 155,948
Int. Cl.³ A61M *3/00*
U.S. Cl. 128—239 **9 Claims**



1. A peristalsis-stimulating device for activating muscles of a relatively unrestricted body cavity forming the intestinam rectum comprising:

(a) a seating arrangement adapted to be placed on a waste receptacle;

(b) a fluid conveyor tube having a distal end that can be readily adapted to being inserted up the body cavity, the fluid conveyer tube having an outer profile which is sufficiently narrow to permit spontaneous evacuation by a patient when the tube is in said patient's anal canal;

(c) a nozzle located within the distal end, the nozzle being located with respect to the seating arrangement and adapted to deflect a fluid stream radially outwardly and

candally downwardly away from the distal end toward tactile nerve receptors within the cavity for the purpose of stimulating the nerve receptors, whereby

the fluid stream directed toward the tactile nerve receptors lightly touches said nerve receptors, and thereby evokes peristaltic contraction of the muscles surrounding the rectum, permitting and causing bowel elimination while the fluid conveyer tube is in the patient's anal canal.

4,321,921

APPARATUS FOR SUCKING BLOOD OUT OF BODY CAVITIES

Max Laszczower, Basel, Switzerland, assignor to Solco Basel AG, Switzerland

Filed Aug. 15, 1979, Ser. No. 66,714

Claims priority, application Switzerland, Aug. 17, 1978, 8717/78

Int. Cl.³ A61M *1/00*

U.S. Cl. 128—276 **8 Claims**

1. An apparatus for sucking blood out of body cavities, said apparatus comprising:

(a) a collecting vessel including a suction tube having a lower end section with at least one orifice defined therein,

(b) a filter means including a filter medium and means for fixing an upper edge of the filter medium to the lower end section of the suction tube,

(c) said filter medium being spaced from said orifice to protect the suction tube orifice from contact with the filter medium which surrounds the lower end section of the suction tube,

(d) said fixing means being effective to secure the upper edge of the filter medium around the entire periphery thereof and including disk means, laterally displaced from the lower end of the suction tube,

(e) said disk means including a plate and an annular groove,

(f) said filter medium including a sock-shaped filter fabric having a free upper end edge, and

(g) the filter medium fixing means fixes the upper end edge of the sock-shaped filter fabric in the annular groove adjacent the plate.

4,321,922

MEDICAL RECEPTACLE WITH DISPOSABLE LINER ASSEMBLY

David W. Deaton, 922 Ruswood Cir., Abilene, Tex. 79601

Filed Jan. 21, 1980, Ser. No. 113,620

Int. Cl.³ A61F *5/44*

U.S. Cl. 128—276 **40 Claims**

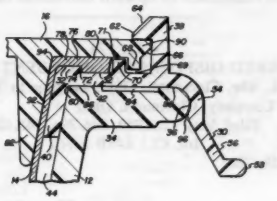
1. Apparatus having vacuum and patient drainage ports for receiving fluids from the body of a patient comprising:

a rigid outer canister having an open mouth;

an open topped disposable container for being removably inserted within said canister;

peripheral lid means supporting said container from the upper portion of said canister such that said container extends within said outer canister with a space provided therebetween; and

a removable cover coacting with said peripheral lid supporting means for being removably retained over said mouth of said canister and over the open top of said container, and having a patient drainage port for receiving fluid from



the body of a patient, and a vacuum port for effecting a vacuum within said container for drawing fluid through said patient port for collection in said container, said peripheral lid supporting means, said container and said cover acting as a unit which may be removed from said canister as a sealed unit for disposal.

4,321,923

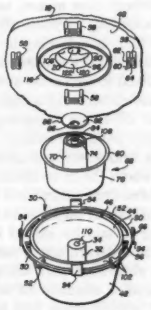
LOW PROFILE SHUT-OFF VALVE FOR MEDICAL SUCTION APPARATUS

Robert L. Nichols, 808 Fort Worth St., Jacksonville, Tex. 75766

Filed Jan. 31, 1980, Ser. No. 117,058

Int. Cl.³ A61M *1/00*

U.S. Cl. 128—276 **21 Claims**



1. In medical suction apparatus including a fluid container with a cover having a patient port for receiving fluid from the body of a patient and a vacuum port for establishing a vacuum in the container for drawing fluid through the patient port, the improvement comprising a basket and float assembly shut-off valve for the vacuum port comprising in combination:

a basket having a bottom and side walls depending downwardly from said cover below said vacuum port and having one or more upper vacuum communication passages and one or more lower fluid communication openings;

a float received within said basket and having a peripheral floatation surface;

said basket and said float having complementally interfitting guiding structure centrally located relative to said peripheral floatation surface for guiding said float upwardly to close said vacuum port in response to rising fluid level in said container entering said basket through said one or more lower openings, said guiding structure including a

vertical stalk extending upwardly from the bottom wall of said basket;

a generally tubular vertical reception sleeve closed at the top and formed integrally with said float for receiving said stalk in telescoping relation; and

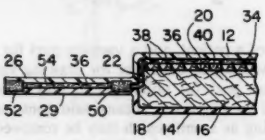
stop means including point contact means between the top of said stalk and the underside of the closed top of said sleeve to provide a gap therebetween to prevent liquid surface-tension impedance to upward movement of said float.

4,321,924

BORDERED DISPOSABLE ABSORBENT ARTICLE

Nicholas A. Ahr, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 12, 1980, Ser. No. 148,658
Int. Cl.³ A41B *13/02*
U.S. Cl. 128—287 **8 Claims**



1. A disposable absorbent article comprising:

an absorbent core means for absorbing liquid, said absorbent core means having a first and a second opposed face;

a liquid impermeable backsheet overlaying said first opposed face of said absorbent core means; said backsheet having a backsheet flap extending beyond the periphery of said first opposed face;

a liquid permeable topsheet overlaying said second opposed face of said absorbent core means, said topsheet having a topsheet flap extending beyond the periphery of said second opposed face, and having an inner surface facing toward said absorbent core means, said topsheet having a layer of fibers affixed to said inner surface of said topsheet, said layer of fibers comprising a multiplicity of individual fibers, said layer of fibers weighing at least about 1.5 grams of said fibers per square meter of said topsheet; and

a border encircling said absorbent core means, said border extending from about 0.125 to about 1.0 inches outward from said absorbent core means and comprising said topsheet flap, said backsheet flap and a channel, said topsheet flap being affixed to said backsheet flap along an inward seam and along an outward seam, said inward seam being adjacent to said absorbent core means and said outward seam being spaced a distance of at least about 0.0625 inches from said inward seam, said inward seam and said outward seam being liquid impermeable, said channel being bounded by said topsheet flap, said backsheet flap, said inward seam and said outward seam.

4,321,925

METHOD AND A DEVICE FOR CONTROLLING THE OCCURRENCE OF PERFORATIONS IN OPERATION GLOVES

Jan Hoborn, Askim, and Ulrich Krebs, Harestad, both of Sweden, assignors to Molnlycke AB, Goteborg, Sweden

Filed Nov. 5, 1979, Ser. No. 91,488
Claims priority, application Sweden, Nov. 9, 1978, 7811560
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.13 **6 Claims**

1. A method for detecting perforations in a protective element, such as a surgical glove worn by an operator such as a surgeon, during the performance of an operation, such as surgery, on an object, such as a patient, said method comprising the steps of:

at regularly recurring time intervals during said operation, sensing the electrical conductivity through said operator, said protective element, and said object connected in series; and

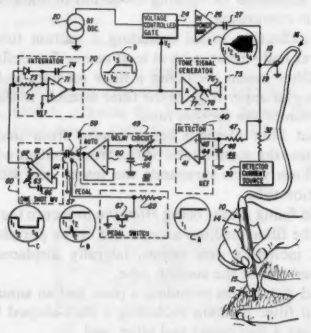
signaling an alarm in response to changes exceeding a predetermined level in said sensed conductivity.

4,321,926

INSERTION DETECTING PROBE AND ELECTROLYSIS SYSTEM

Ralph R. Roge, 6426 S. Richmond Ave., Clarendon Hills, Ill. 60514

Filed Apr. 16, 1979, Ser. No. 30,602
Int. Cl.³ A61B *17/41*
U.S. Cl. 128—303.18 **7 Claims**



1. A system for selectively cauterizing skin pores comprising:

a probe having a conductive central needle adapted for insertion into a patient's skin pore and a conductive outer sleeve portion adapted to be handheld by an operator who is in electrical contact with the patient;

an electrical power source for producing shortwave electrical energy suitable for skin cauterization;

low current detector means operatively associated with said central needle and outer sleeve of the probe for sensing when low current electrical contact is made between the central needle of the probe and the patient's skin and producing an electrical signal in response thereto;

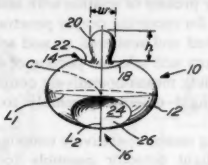
means response to said electrical signal from said detector means for coupling said shortwave electrical energy to the probe central needle for cauterization of the skin pore;

and means for controlling the duration of application of said electrical shortwave energy to said central needle.

4,321,927
PACIFIER FOR NEWBORNS

Annette R. Lynch, 822 19th St., Charleston, Ill. 61920

Filed Feb. 4, 1980, Ser. No. 118,401
Int. Cl.³ A61J 17/00
U.S. Cl. 128—360 10 Claims



1. A pacifier for a newborn baby, comprising, in combination:

a substantially ellipsoidal base member having a surface, a major axis and a minor axis, said major axis being greater than said minor axis;

a recessed portion located on said surface substantially concentric with said minor axis; and

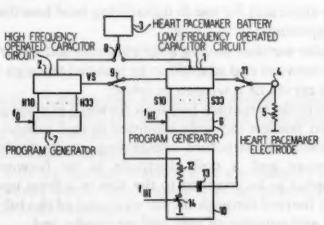
a nipple secured to said substantially ellipsoidal base member within said recessed portion and located substantially at the center of said recessed portion;

said nipple, said recessed portion and said substantially ellipsoidal base member defining safety support means for retaining said pacifier in a proper position within the mouth of said newborn baby and partially supporting the head of said newborn baby while avoiding and preventing blockage of said newborn baby's nose.

4,321,928
HEART PACEMAKER

Hakan Elmqvist, Bromma, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 18, 1980, Ser. No. 188,518
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939233
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PG 7 Claims

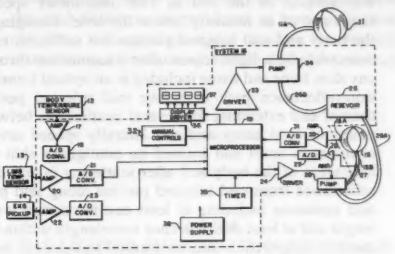


1. A heart pacemaker with clock pulse generator and a processing circuit for supplying the stimulation pulses, and an operating voltage generator, in particular a battery, the processing circuit comprising capacitor circuit means including capacitors which can be charged in parallel and discharged serially, characterized in that the capacitor circuit means (C0 through C3; C10 through C12) has a program generator (6; 7), and program switches (S10 through S33; H10 through H33) assigned to it which interconnect or, respectively, disconnect individual capacitors in combinations randomly prescribable as needed for parallel charging and/or serial discharge, said interconnection or, respectively, disconnection occurring under the control of said program generator (6; 7).

4,321,929
TOURNIQUET

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840, and Christian Grund, 2035 Burr Ave., Bronx, N.Y. 10461

Filed Oct. 12, 1979, Ser. No. 84,428
Int. Cl.³ A61B 5/00
U.S. Cl. 128—630 22 Claims



1. An automatic tourniquet for use in arresting the flow of blood in a limb of a living being to prevent bleeding and loss of blood by said living being comprising in combination:

first means for compressively engaging the exterior portion of a human body limb and compressing blood vessels therein in a manner to restrict the flow of blood in said blood vessels extending through a portion of the limb engaged,

second means for activating said first means to cause said first means to apply pressure to the exterior of said body limb,

third means for deactivating said first means after it is activated by said second means to relieve pressure on said body limb,

electrically operated control means for controlling said second and third means to selectively activate and deactivate said first means to compress and release pressure on said body limb engaged by said first means,

sensing means for sensing a physiological variable and generating a signal which is indicative of said variable,

computing means connected to receive signals from said sensing means and including signal processing means for processing the received signals and means for determining when the variable sensed exceeds a predetermined value and means for generating a control signal when such determination is made,

means for applying said control signal to said control means to cause said control means to control said second means to cause said first means to compress and apply force against said body limb in accordance with the characteristics of the variable sensed so as to predeterminately arrest the flow of blood through said body limb.

4,321,930
APPARATUS FOR MONITORING METABOLISM IN BODY ORGANS

Frans F. Jöbsis; Johannes H. Keizer, and Ronald F. Overaker, all of Durham, N.C., assignors to Duke University, Inc., Durham, N.C.

Continuation-in-part of Ser. No. 810,777, Jun. 28, 1977, Pat. No. 4,281,645, and Ser. No. 17,727, Mar. 5, 1979, Pat. No. 4,223,680.
This application Sep. 18, 1980, Ser. No. 188,578
The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.
Int. Cl.³ A61B 5/00
U.S. Cl. 128—633 11 Claims

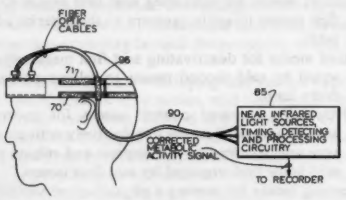
1. A spectrophotometric reflectance apparatus for measuring in situ, in vivo, non-invasively, atraumatically, harmlessly, rapidly and continuously a local metabolic oxygen dependent activity of a selected portion of the body such as the brain of a

body where such activity bears a measureable relation to an oxygen dependent absorption characteristic of the selected portion for a particular wavelength of light transmitted therethrough, comprising:

(a) circuitry means including:

(i) a plurality of near-infrared light sources located external of the body and having light emissions of different wavelengths in the 700 to 1300 nanometer spectral range and of an intensity below the level damaging to the body and said selected portion but sufficient to be detectable by a light sensor after transmission through any skin, bone and tissue included in an optical transmission-reflectance path including said selected portion thereof and extending for several centimeters between points of light entry and exit laterally spaced several centimeters apart and located on contiguous skin surface areas of the body and after scattering in and deep reflectance from said selected portion along said path, said emissions including at least one measuring wavelength and at least one reference wavelength within said spectral range, each said measuring wavelength being selected such that said selected portion exhibits a selected absorption therefore, the extent of which is dependent upon a specific state of a local metabolic, oxygen dependent activity of said selected portion; and

(ii) means operatively associated with said light sources to produce emissions representing at least one said measuring wavelength and at least one said reference wavelength within said spectral range for transmission along said path to said selected portion and at levels of intensity below that which would be damaging to the body and said selected portion;



(b) first optical cable coupling means for receiving transmitting and directing the output light emissions of said light sources at said measuring and reference wavelengths to a light entry point proximate said body;

(c) a detachable, body mountable apparatus associated with said circuitry means including:

(i) a flexible, elongated support member adapted to be releasably secured to the body proximate a said selected portion of the body having a selected set of said light entry and exit points, said support member being adapted to provide ambient light shielding over said light entry and exit points and to conform to the curvature and shape of the body at the location thereof;

(ii) a mounting structure secured to said support member and adapted to deform in shape in correspondence with the curvature assumed by said support member when secured to the body;

(iii) a first preformed light guide means mounted in said mounting structure and optically coupled to said first optical cable means and having an optical face for light exit adapted to be mated in a substantially pressed fit relation with said selected point of light entry for entry of light in said wavelengths to be transmitted, deeply reflected and scattered along said path and to said selected portion;

(iv) a first preformed light detector assembly mounted in said mounting structure proximate said first light guide means and having first light collector means adapted to be mated in a substantially pressed fit relation with said selected point of light entry for receiving deeply penetrating light emissions reflected directly back from any skin, bone and tissue at or within a few millimeters of said selected point of light entry; and

(v) a second preformed light detector assembly mounted in said mounting structure and having second light collecting means spaced several centimeters away from said first collector means and adapted to be mated in a substantially pressed fit relation with said selected point of light exit for receiving deeply penetrating light emissions reflected and scattered to said selected point of light exit from said selected portion of said body;

(d) second coupling means operatively coupling the output of said first light detector assembly to said circuitry means;

(e) third coupling means operatively coupling the output of said second light detector assembly to said circuitry means; and

(f) processing means operatively associated with said circuitry means adapted to produce from the outputs of said first and second light detector assemblies an electrical output signal corrected for changes in blood volume of said skin, bone and tissue during the measuring cycle and representing the difference in absorption of said measuring and reference wavelengths by said selected body portion as a function of the state of said local metabolic oxygen dependent activity and further adapted to convert said electrical output signal to a signal providing a substantially continuous and rapid measure of said activity.

4,321,931

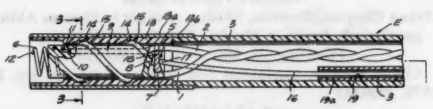
ELECTRODE STRUCTURE AND APPLICATOR THEREFOR

Edward D. Hon, 11 Bradbury Hills Rd., Bradbury, Calif. 91010

Continuation-in-part of Ser. No. 895,110, Apr. 10, 1978, abandoned. This application Mar. 20, 1979, Ser. No. 21,550

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—642 **50 Claims**



1. An apparatus for use in monitoring fetal heartbeat and the like comprising:

a tubular member having a forward end and a rearward end, the forward end adapted to be inserted through the vagina and cervix of a woman in labor;

an electrode structure having a forward portion and a rearward portion movably mounted in said tubular member;

said electrode structure comprising an electrode carrying member and a coil electrode at its forward portion adapted to be attached to the skin of a fetus upon projection thereof through the forward end of the tubular member and rotation of said coil electrode; and

means associated with said electrode structure for converting linear motion to rotary motion for rotating and projecting said electrode structure through the forward end of said tubular member responsive to linear motion.

4,321,932

ELECTRODE IMPEDANCE MONITORING METHOD APPARATUS FOR ELECTROCARDIOGRAPHY

David B. Francis, Mt. Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

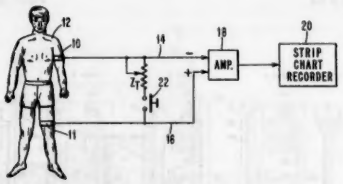
Filed Jun. 29, 1979, Ser. No. 53,637

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—696 **23 Claims**

1. Inter-electrode impedance measuring apparatus for electrocardiography, comprising:

two EKG electrodes;
an impedance element Z_T;
means for temporarily connecting said impedance element between said two EKG electrodes while said EKG electrodes are in position to pick up EKG signals from a subject;
means for measuring both the amplitude A_U of an EKG signal picked up by said EKG electrodes when said impedance element is not connected between said two EKG electrodes and the amplitude A_L of an EKG signal picked up by said EKG electrodes when said impedance element is connected between said two EKG electrodes, the inter-electrode impedance Z_E being related to Z_T, A_U and A_L at least to an approximation by the formula



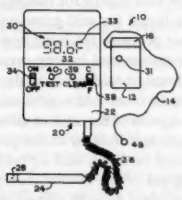
$$Z_E = Z_T(A_U/A_L - 1).$$

4,321,933

TELEMETRY SYSTEM FOR MONITORING HOSPITAL PATIENT TEMPERATURE

Lee R. Baessler, Costa Mesa, Calif., assignor to Baessler Medical Electronics, Inc., Redondo Beach, Calif.

Filed Aug. 23, 1979, Ser. No. 68,758
Int. Cl.³ A61B 5/00
U.S. Cl. 128—736 **14 Claims**



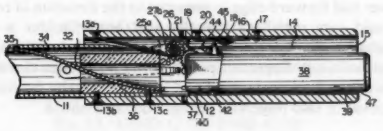
1. A patient temperature monitoring system comprising a plurality of transmitters, one associated with each patient to be monitored, and a receiver,
each transmitter comprising:
a thermistor for thermal contact with a portion of the body of a patient whose temperature is to be measured,
reference resistance means,
means coupled to said thermistor and said reference resistance means for providing a high frequency output signal having a duty cycle proportional to a ratio of value of resistance of said thermistor relative to said reference resistance means,
said receiver comprising:
demodulating means responsive to said high frequency transmitter output signal for providing an envelope signal of duration proportional to the duration of said transmitter duty cycle output,
microprocessor means coupled to receive an input from said demodulating means to calculate patient temperature in both Fahrenheit and Centigrade conventions and comprising memory storage means for storing digital representations proportional to maximum and minimum allowable envelope signal durations and comparison means for comparing the duration of said envelope signal with said maximum and minimum digital representations,
display means coupled to said microprocessor output including manually actuable selection means to alternatively display patient temperature in degrees Fahrenheit or in degrees Centigrade and to indicate the convention displayed, and,
said comparison means is coupled to said display means so that said display means produces an error indication output when said envelope signal duration lies beyond said maximum and minimum allowable digital representations.

4,321,934

GAS LIGHTER POWERED CURLING DEVICE

Walter J. Diederich, West Newbury, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Feb. 2, 1981, Ser. No. 230,835
Int. Cl.³ A45D 2/24
U.S. Cl. 132—37 R **3 Claims**



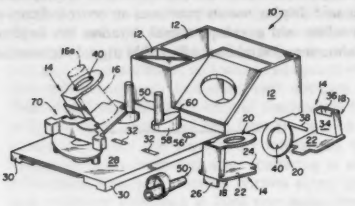
1. A curling device adapted to be powered by a gas lighter having a valve actuating means and a flint wheel assembly, the curling device comprising:
a barrel having a hair winding portion disposed between first and second ends;
a hollow handle having a first end and a second end, said first end of said handle being connected to said second end of said barrel, said handle having an opening leading into said hollow of said handle, said hollow being of such a size that the gas lighter is capable of being inserted through said opening into said hollow of said handle;
biasing means for retaining the lighter in said hollow when the lighter is in a first position in said hollow and for releasing the lighter from said hollow through said opening when the lighter receives a predetermined force;
a bi-metal member thermally responsive to the temperature of said barrel and secured to said barrel, said bi-metal member having a gripping means adapted to engage the lighter when the lighter is in a second position in said hollow of said handle, when the temperature of said barrel exceeds a predetermined temperature, said gripping means of said bi-metal element releases engagement with the lighter;
means for activating the valve actuating means of the lighter when the lighter is in the second position; and
flint wheel actuator means connected to the curling device and including a rotatable member having a grooved portion and a gripping portion, said flint wheel actuator means further including a flexible member adapted to engage said grooved portion of said rotatable member wherein the positioning of the lighter into the second position causes frictional engagement of the flint wheel assembly of the lighter with said gripping portion of said flint wheel actuation means thereby creating an ignition of the gas released by the valve actuating means of the lighter.

4,321,935

FINGERNAIL-POLISHING ARTICLE OF MANUFACTURE

Howard Sussman, c/o F. F. Adams Inc., 700 NW. 8th Ave., Fort Lauderdale, Fla. 33311

Filed Mar. 18, 1981, Ser. No. 245,142
Int. Cl.[3] A45D *29/00*
U.S. Cl. 132—73 5 Claims



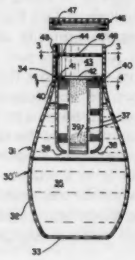
1. A convenience article of manufacture for applying fingernail polish comprising a pivotally mounted fingernail polish bottle holder having a bottom wall presenting a forward edge, a rotatably mounted cam member having an operative position in supporting contact beneath said forward edge of said bottle holder, and a cam surface on said cam member at said contact with said bottle holder forward edge effective to raise and lower said forward edge in response to the direction of rotation of said cam member, whereby said bottle holder is urged through a pivotal traverse causing a corresponding angular position in any fingernail polish bottle positioned therein and thus of the fluid contents of said bottle to thereby facilitate the removal of said fingernail polish from said bottle.

4,321,936

NAIL POLISH REMOVER

Anthony Chaconas, 215 Lakeside Dr. T-3, Greenbelt, Md. 20770

Filed Oct. 1, 1980, Ser. No. 192,856
Int. Cl.[3] A45D *29/20*
U.S. Cl. 132—75 6 Claims



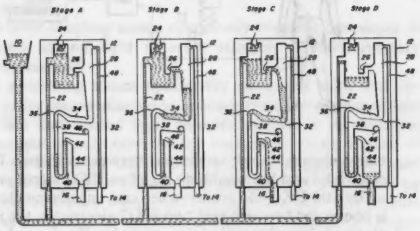
1. A nail polish remover comprising a hollow container including a rounded body portion, said container including a flat bottom, said container further including a reduced diameter neck portion, a mesh screen mounted in said container, fluid in said container, a plurality of spaced apart support pieces mounted in said container, said support pieces having lower inner curved ends, a plurality of flexible bristles affixed to the innr surfaces of said support pieces, a first flexible body element providing a seal mounted in said neck portion, and said body element having a slit therein, and a second flexible body element spaced from said first body element, and said second body element having a slit therein.

4,321,937

AUTOMATIC LIQUID DELIVERY APPARATUS

Bradner M. Littlehale, 751 Fairmount Ave., Chatham, N.J. 07928

Filed Feb. 28, 1979, Ser. No. 15,775
Int. Cl.[3] A01G *25/00*
U.S. Cl. 137—78.3 11 Claims



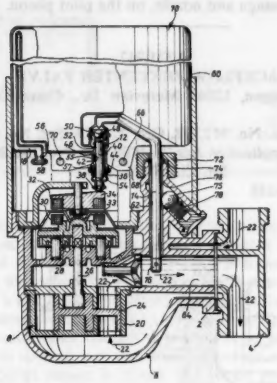
1. An automatic liquid delivery apparatus for automatically supplying liquid for a plant growing medium as needed, comprising: a liquid container open to atmospheric pressure having a discharge outlet for the gravity flow of liquid from said container, a liquid source connected to said container through a restricted passage for supplying liquid to maintain liquid in said container at a predetermined level, conveying means having a passage leading from said discharge outlet to a dispensing outlet below said source for passage of liquid from said container to supply liquid for said growing medium, said passage including an air pressure retaining space to receive liquid from said liquid container and having means confining air in said space, air confined in said space under pressure blocking the discharge of liquid from said container, a passage leading from said space for egress of air, and an air outlet communicating with said passage and located at the predetermined liquid level for said growing medium, said air outlet being closed by liquid to prevent egress of air, so that lack of liquid below the amount required for plant growth allows air to pass from said space and the discharge of liquid from said container to dispense liquid for said medium from said dispensing outlet, said restricted passage limiting flow to said container, so that said container may empty when liquid is discharged and air may enter said air retaining space and said container will be filled from said source after emptying through said discharge outlet.

9. The method of automatically delivering liquid by gravity to a delivery outlet, comprising: opposing gravity flow of liquid from a liquid supply container open to atmosphere by air pressure in a space for receiving liquid through a discharge outlet from said supply container, confining the air under pressure in said space by liquid in a passage between said supply and said delivery outlet, sensing a condition in a zone of liquid use requiring the delivery of liquid, and releasing said air under pressure upon sensing said condition to allow flow of liquid from said liquid supply container through said space and passage and to deliver liquid to said zone of liquid use, and refilling said supply container through a restricted passage from a source of liquid to allow flow to said supply container more slowly than the flow through said discharge outlet, so that upon emptying of said container, air will enter said air space.

4,321,938
DOSING DEVICE

Rudi Siller, Abstatt, Fed. Rep. of Germany, assignor to Cillichemie Ernst Vogelman GmbH & Co., Heilbronn, Fed. Rep. of Germany

Filed Jul. 1, 1980, Ser. No. 165,182
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1979, 2927617
Int. Cl.³ G05D *11/03*
U.S. Cl. 137—99 **12 Claims**



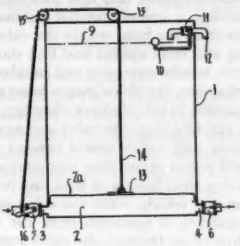
1. Device for dosing liquid effective substances in flowing water comprising a housing arranged to conduct water through a flow path therein, said housing being arranged for connection to a water line, a drive mechanism located in the water flow path in said housing and arranged to be driven by the water flowing therethrough, a dosing pump driven by said drive mechanism, a replaceable tank containing the liquid effective substance, an injection valve arranged to deliver the liquid effective substance to the water flowing through said housing, said dosing pump having a suction side connected to the interior of said tank and a pressure side connected to said injection valve, wherein the improvement comprises that said tank and said dosing pump form a disposable unit removable mountable on said housing and connectable with said driving mechanism said dosing pump comprises a piston pump including a cylinder, a piston guided in said cylinder, a tappet connected to said piston, and spring means for biasing said tappet into contact with said drive mechanism, said tank including a chamber separate from the interior of said tank and being in communication with the interior of said tank, said pump cylinder including said piston being located within said tank chamber, a valve body located at the opposite end of said cylinder from said tappet and providing a closure from said cylinder to said chamber, said chamber having an opening therethrough at the opposite end thereof from said valve body and opening to the exterior of said tank, said tappet extending from said opening to the exterior of said tank, and means forming a sealed closure between said through opening and said tappet.

4,321,939
MULTI-LIQUID FLOW PROPORTIONING DEVICE

Harry T. Fenwick, 103 Argyll St., Coffs Harbour, New South Wales, Australia (2450)

Filed Nov. 3, 1980, Ser. No. 203,671
Claims priority, application Australia, Nov. 2, 1979, PE1173
Int. Cl.³ G05D *11/03*
U.S. Cl. 137—101.27 **9 Claims**

1. A liquid flow proportioning device comprising a vessel for containing a first liquid, a container within said vessel for holding a second liquid separate from said first liquid, separate inlet and outlet means respectively for the portion of said vessel for containing said first liquid and for said container, said container including a flexible wall portion which moves in use in response to changes in pressure of its liquid contents and changes in level of said first liquid, said flexible wall portion being sealingly attached to side wall portions of said vessel, whereby said container is defined by portions of said vessel's

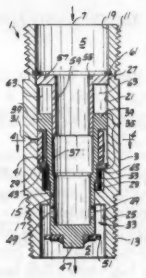


side walls, the base surface thereof, and said flexible wall portion, and means operable by the movement flexible of said wall portion to control the liquid flow into the inlet of said container whereby tending to maintain the volumetric contents thereof generally constant.

4,321,940
UNLOADER/CHECK VALVE

Joseph L. Krechel, Ladue, and Michael J. Purvis, Fenton, both of Mo., assignors to Control Devices, Incorporated, St. Louis, Mo.

Filed Jan. 19, 1981, Ser. No. 226,110
Int. Cl.³ G05D *11/03*; F04B *49/08*
U.S. Cl. 137—116 **9 Claims**



1. An unloader/check valve, particularly for air compressors, comprising

a one-piece elongate valve body having a hole therethrough from one end constituting its inlet end to the other constituting its outlet end,

the valve body having an integral valve seat in the hole,

the hole comprising a first bore extending in from the inlet end, a second bore of smaller diameter than the first extending downstream from the first, a third bore of smaller diameter than the second extending downstream from the second to the seat, a fourth bore extending upstream from the outlet end to the seat, and a central opening in the seat, with a first upstream-facing annular shoulder at the downstream end of the first bore and a second upstream-facing shoulder at the downstream end of the second bore, the opening in the seat being of smaller diameter than all said bores,

the valve body having an air bleed from said second bore to the outside spaced downstream from said first shoulder,

valve means axially slidable in the hole comprising annular

piston means and a tubular stem extending downstream from the piston means, the piston means sliding in said second bore, the stem closing the opening in the valve seat when the valve means is in a retracted position, the stem being closed at its downstream end,

a dashpot cylinder having an annular head received in said first bore seated against said first shoulder, said dashpot cylinder having a central tubular extension extending downstream from the head within the valve means,

means holding said head against said first shoulder,

the second bore, tubular extension and annular head forming a dashpot chamber, the piston means being slidable on said tubular extension in said dashpot chamber,

spring means reacting from the valve seat against the piston means biasing said valve means toward said retracted position, said piston means then uncovering the bleed,

the tubular valve stem having at least one port adjacent its downstream end which, when the valve means is in said retracted position, is upstream from the valve seat for blocking flow of air through the valve stem to the outlet end of the hole, said valve means being movable downstream against the spring bias to a fully open position determined by engagement of the piston means with the second shoulder wherein the port in the stem is downstream from the valve seat for flow of air through the stem and said port to the outlet end of the hole, said piston means blocking the bleed upon movement away from its retracted position.

4,321,941

PILOT OPERATED PRESSURE RELIEF VALVE

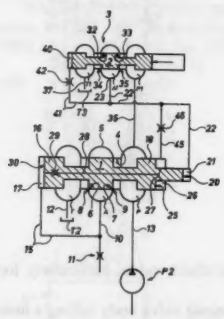
Karlheinz Hunschede, Marktheidenfeld, and Helmut Krebs, Gemünden, both of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Lohr, Del.X

Filed Dec. 3, 1980, Ser. No. 212,673

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949922

Int. Cl.³ G05D *11/00*

U.S. Cl. 137—116.3 **4 Claims**



1. A pilot operated pressure relief valve unit comprising a main valve including a hollow body; a main piston arranged for reciprocating movement in the body and having two opposite end faces each bounding with said body a control space; a main pressure channel, a consumer channel and a return channel opening, respectively, into the hollow body between said control spaces; said main piston controlling communication between said channels; one of the control spaces being connected to the consumer channel; a passage formed with a nozzle interconnecting said control spaces; a pilot valve including a second hollow body, a pilot piston arranged for reciprocating movement in the second body and having a first end face bounding with the second body a pilot control space and a second end face bounding with the second body a chamber including means biasing the pilot piston in opposition to pressure in said pilot control space; a pilot pressure channel, a pilot control channel and a pressure outlet channel, said pilot control channel communicating with the pilot control space; said pilot piston controlling communication between said channels; and a control conduit connecting said pilot control space to the other control space of the main valve for admitting a control pressure to the other control space in order to move said main piston in a direction in which communication is established between said main pressure channel and said consumer channel while pressure in said consumer channel acts in opposite direction on the main piston and, through the interconnecting passage and nozzle, on the pilot piston.

4,321,942

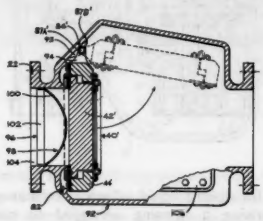
BACKFLOW PREVENTER VALVE

Daniel C. Duggan, 12049 Mereview Dr., Creve Coeur, Mo. 63141

Division of Ser. No. 947,778, Oct. 2, 1978, Pat. No. 4,249,568. This application Apr. 8, 1980, Ser. No. 138,290

Int. Cl.³ F16K *24/00*

U.S. Cl. 137—218 **26 Claims**



1. A backflow preventer valve comprising a housing structure having top and bottom portions and a chamber formed therein with inlet and outlet ports, a pair of spaced valve seats associated with one of said ports including means on said housing structure forming a space between said valve seats, a movable valve assembly hingedly attached to said housing structure for movement in said chamber between a closed position adjacent to said valve seats and an open position angularly related to said closed position, said valve assembly having a clapper portion defined by inner and outer members, a flexible valve seat member and first and second members for attaching the flexible valve seat member respectively to said inner and outer relatively movable clapper members, said flexible valve seat member having a first portion positioned to be engageable with said first valve seat in the closed position thereof and a second portion positioned to be engageable with said second valve seat in the closed position thereof, and a discharge port in the housing structure communicating the space formed in said housing structure between the spaced valve seats with atmosphere, said discharge port being located adjacent to the bottom of said housing structure in position to drain fluid from between the spaced valve seats and the movable valve assembly when said valve assembly is in its closed position to maintain an airspace therebetween.

4,321,943

AUTOMATIC HOT WATER RECOVERY SYSTEM

Spencer K. Haws, P.O. Box 315, Mesa, Wash. 99343

Filed Feb. 25, 1980, Ser. No. 124,491

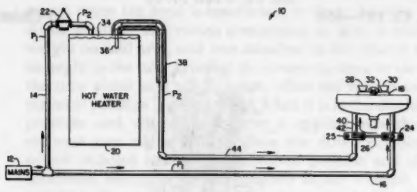
Int. Cl.³ F16K *49/00*; F24H *1/00*

U.S. Cl. 137—337 **9 Claims**

1. In a plumbing system having a first cold water inlet conduit coupled to a pressurized water main, a hot water reservoir coupled to said first cold water inlet conduit, a hot water conduit coupled between said reservoir and a first outlet means and a second cold water conduit coupled between said pressurized water main and a second outlet means, an apparatus for

recovering heat in said hot water conduit to said hot water reservoir comprising:

pressure reducing means coupled between said pressurized water main and said hot water reservoir in said first cold water conduit for establishing a pressure differential between hot water in said hot water conduit and cold water in said second cold water conduit such that the pressure in said hot water conduit is less than the pressure in said second cold water conduit;



bridge conduit means coupling said second cold water conduit and said hot water conduit adjacent said first and second outlet means for allowing introduction of cold water into said hot water conduit; and wherein

said hot water reservoir defines means including an air space for accumulating pressure such that water presssure from said cold water conduit urges water in said hot water conduit toward said hot water reservoir whenever said first outlet means is closed and water pressure in said second cold water conduit exceeds water pressure in said hot water conduit.

4,321,944

CHECK VALVE

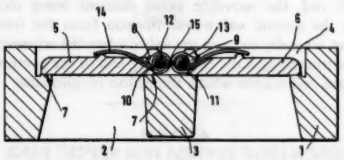
Gerhard Schützer, Stuhr, Fed. Rep. of Germany, assignor to Gustav F. Gerdts KG, Bremen, Fed. Rep. of Germany

Filed Oct. 14, 1980, Ser. No. 196,417

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1979, 7929136[U]

Int. Cl.³ F16K *15/03*

U.S. Cl. 137—512.1 **1 Claim**



1. A check valve comprising:

a valve housing having a valve seat defined therein, on one side of which is a flow inlet chamber and on the other side of which is a flow discharge chamber;

two side-by-side locking members pivotably mounted in said valve housing for movement between an open and closed position relative to said valve seat, said locking member having their pivoting edges mounted adjacent and parallel to each other in said housing;

bearing bushings formed in the pivoting adjacent edges of each locking member;

a pair of side-by-side shafts pivotably engaging the bushings of said locking members and having their ends engaged in said valve housing; and

at least two shank springs, each of which has two shanks joined by a plurality of windings, one spring of which with its associated windings is mounted on one of said shafts, and the other spring of which with its associated windings is mounted on the other of said shafts, with one of said two shanks of each spring engaging the locking member coupled to the same shaft as the corresponding spring, so as to urge said locking member into a closed position and the other of the two shanks of each spring being supported on an abutment in said housing, said abutment for each of said other shanks of each spring being provided by the shaft on which the other spring is mounted.

4,321,945

DAMPED FLUID PRESSURE RELIEF VALVE

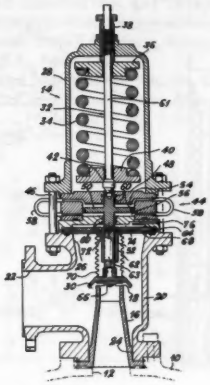
Jean Chabat-Courrede, Moret sur Loing, France, assignor to Electricite de France (Service National), Paris, France

Filed Apr. 17, 1980, Ser. No. 141,193

Claims priority, application France, Jan. 15, 1980, 80 00842

Int. Cl.³ F16K *47/00, 15/06*

U.S. Cl. 137—514.7 **6 Claims**



1. A safety valve for relief of pressure from a fluid-filled enclosure, comprising a valve unit, a hydraulic brake sub-assembly and a return spring sub-assembly aligned in that order along a common axis:

said valve unit having a connecting member for fluid tight connection with the enclosure, said member being formed with passage means communicating an inlet aligned with said common axis and an outlet, said inlet having a valve seat concentric with said common axis, a valve member mounted within said passage for movement along said common axis toward and away from said valve seat, said valve member having a first stem section sealingly projecting out of said connecting member toward said hydraulic brake sub-assembly;

said hydraulic brake sub-assembly having cylinder means with axially opposed radial surfaces, a partition in said cylinder means and defining therewith two liquid filled variable volume chambers, calibrated flow means providing a restricted flow path between said chambers, and a second stem section fastened to said partition and axially projecting out of said cylinder for aligned abutting connection of one end of said second stem section with said first stem section;

said return spring sub-assembly including a bell-shaped housing, a third stem section axially slidably received in said housing, calibrated spring means having one end engaging said third stem at the end thereof closest to said hydraulic brake sub-assembly and the other end engaging said housing forcing said third stem section into aligned abutting connection with said second stem section; and

fastening means removably clamping said hydraulic brake sub-assembly between said valve and said return spring sub-assembly with said opposed end radial surfaces of said

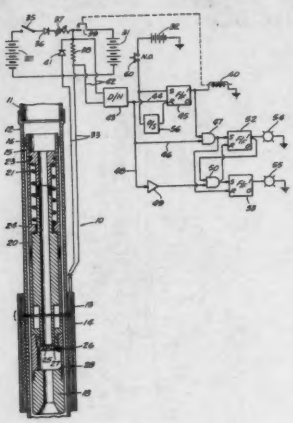
cylinder means in contact with cooperating end surfaces of said connecting member and said housing respectively.

4,321,946

ARMATURE POSITION MONITORING AND CONTROL DEVICE

Louis B. Paulos, 9616 Yolanda Ave., Northridge, Calif. 91324, and Donald L. Huebsch, 3716 Prestwick Dr., Los Angeles, Calif. 90027

Filed Mar. 31, 1980, Ser. No. 135,647
Int. Cl.³ F16K *37/00, 31/06;* G08B *21/00*
U.S. Cl. 137—554 **28 Claims**



1. That improvement in a solenoid actuated mechanism which comprises:

a solenoid connectable to a power source and provided with armature means movable between retracted and extended positions as said solenoid is energized and de-energized;

actuatable means movable between extended and retracted positions by said solenoid and including said armature means operable to generate a momentary back EMF signal in said solenoid during said movement of said armature means relative to said solenoid in response to either energization or de-energization thereof; and

monitoring means operatively connected to said solenoid and including means for utilizing said momentary EMF signal to provide an indication of the armature position.

12. That improvement in a safety cutoff valve assembly adapted to be mounted in an earth bore to control fluid flow which comprises:

a non-magnetic tubular housing embraced by a solenoid adapted to be connected to a source of power;

tubular armature means reciprocably supported within and axially of said housing for movement between retracted and extended positions in response to either energization or de-energization of said solenoid;

valve means movably supported within said housing for movement between open and closed positions by said armature means; and

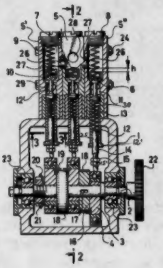
monitoring means responsive to movement of said armature means to utilize a momentary back EMF signal generated in said solenoid during the movement of said armature means in either axial direction to provide a persisting indication of the movement of said armature means to the extended or retracted position thereof.

4,321,947

APPARATUS FOR CONTROLLING PRESSURE FLUID DISTRIBUTION, PARTICULARLY IN JET LOOMS

Miloslav Cech, Brno; Vladimir Vasicek, Moravsky Krumlov, and Vladimir Kuda, Blazovice, all of Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Filed Jun. 11, 1980, Ser. No. 158,489
Claims priority, application Czechoslovakia, Jun. 11, 1979, 4044-79
Int. Cl.³ F16K *37/00*
U.S. Cl. 137—556 **5 Claims**



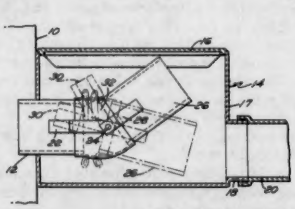
1. In an apparatus for controlling the pulsed distribution of pressure fluid having a valve with a first, fixed valve seat and a second valve seat mounted on a movable valve element cooperating with the fixed valve seat, the valve element being pressed toward the fixed valve seat by means of a first spring, and an intake on the upstream side of the valve for pressure fluid, the improvement wherein the movable valve element is reciprocated by means of a push rod having a closed-ended bore therein receiving a piston, there being a second, coil compression spring interposed between the posed end of the bore and the piston so that the piston can reciprocate relative to the push rod, and an adjustable stop means on the piston to prevent movement of the piston into the push rod beyond a predetermined distance, a rotatable drive shaft, an eccentric mounted upon the drive shaft for recriprocating the piston of the push rod, the movable valve element being moved to separate the second valve seat thereon from the first, fixed valve seat whereby to open the valve when the adjustable stop on the piston engages the confronting end of the portion of the valve push rod within which the piston reciprocates.

4,321,948

DISCHARGE SYSTEM FOR SEPTIC TANK

Earl H. Bradley, 920 County St., Seekonk, Mass. 02771

Filed Jan. 22, 1981, Ser. No. 227,177
Int. Cl.³ F16K *21/18;* E02B *13/00*
U.S. Cl. 137—579 **5 Claims**



1. A discharge system for a septic tank having a substantially horizontal discharge port comprising a conduit including a coupling lying substantially on the axis of and connected to said discharge port;

a tube coupled to the conduit coupling and having a free open outlet end;

tube pivot means whereby said tube pivots with relation to said conduit coupling so that the liquid in the tank flows into the tube to maintain the liquid in the tube at the level of the liquid in said tank;

means normally maintaining the outlet end of the tube in a raised position, yet allowing the tube to pivot downwardly when a predetermined head in the tank is reached whereby a rapid discharge is effected through said open end, the tube raising through action of said last named means when the head is insufficient to keep the tube in a down position, said means comprising an arm, a counter weight on said arm, said arm attached to the tube at such an angle to the tube axis that the torque tending to elevate the tube about said pivot means when the tube is in the elevated position is greater than when it is in the discharge position, and wherein the force is applied at a shorter moment arm when the tube is in the down position to permit delayed return to an elevated position and allow maximum discharge of the retained liquid wherein said weight is disposed on one side of the vertical axis passing through and perpendicular to the axis of the pivot means in both said elevated and discharge positions.

4,321,949

PRESSURE VESSEL

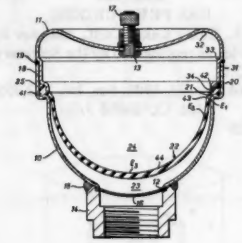
Jacques H. Mercier, Paris, France, assignor to The Normand Trust, New York, N.Y.

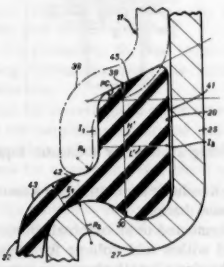
Filed Mar. 4, 1980, Ser. No. 127,234

Claims priority, application France, Mar. 16, 1979, 79 6788; Apr. 27, 1979, 79 10783

Int. Cl.³ F16L *55/04*

U.S. Cl. 138—30 **21 Claims**





1. A pressure vessel which comprises a rigid envelope, a chamber defined by the envelope, which envelope comprises a body and a cover, a fluid orifice provided in the body and the cover, said two orifices being axially aligned, the cover being peripherally encased in the body so that they partially overlap and the cover being fixed to the body, an annular groove defined between the said body and the said cover in the region where they overlap, said groove including an upwardly directed first shoulder on said body and a second downwardly directed shoulder on said cover, a narrow passage via which passage the groove communicates with the chamber, a flexible separator dividing the chamber into two fluid compartments of variable volume, which are each associated with one of the two said orifices, said separator having portions passing through the said narrow passage, a flange provided on the separator and engaged in the said groove, the groove having an axial height between said shoulders which is greater than its radial width; and the flange, in the unstressed condition thereof, having an approximately equal volume to that of the groove but having a greater height and a smaller width than the groove, said flange, in the assembled condition of said pressure vessel, being axially compressed between said shoulders thereby to reduce the heightwise dimension of said flange and expand said flange radially into contact with said groove.

4,321,950

SPHEROIDAL GRAPHITE CAST IRON PIPE AND THE PROCESS FOR PRODUCING SAME

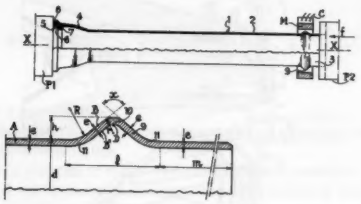
Gerard G. Gaudel, Pont-A-Mousson, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Mar. 3, 1980, Ser. No. 126,756

Claims priority, application France, Mar. 2, 1979, 79 05447

Int. Cl.³ F16L *9/00*

U.S. Cl. 138—109 **7 Claims**



1. A centrifugally-cast iron pipe comprising in combination and in one piece a cylindrical wall having a first end portion defining a bell and a second end portion opposed to said first end portion for insertion in a bell of an identical pipe, at least one outer corrugated circular projection which is provided on said wall in said second end portion by a deformation of said wall and has the same thickness as said wall, said pipe being entirely of spheroidal graphite cast iron, said circular projection having a height which is a plurality of times greater than the thickness of the projection and between 1/12th and 1/7th of the outside diameter of said cylindrical wall and has a length distinctly greater than said height and having a meridian section in the shape of an isosceles triangle having an obtuse apex angle and a radiused apex, and large-radius portions which connect said triangle to the cylindrical wall and have a radius which exceeds the radius of the apex and is a plurality of times greater than the thickness of said wall.

4,321,951

WARP YARN STOP MOTION

Otto Hintsch, Wallisellen, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Mar. 24, 1980, Ser. No. 133,393

Claims priority, application Switzerland, Apr. 25, 1979, 3887/79

Int. Cl.³ D03D *51/28*

U.S. Cl. 139—353 **10 Claims**

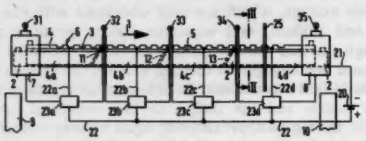
1. In a warp yarn stop motion, the combination of:

a first substantially rectilinear supporting rail;

a second locating rail mounted on said first rail in electrically insulated manner, said rail being sub-divided into at least two electrically insulated sections;

a plurality of drop wires mounted over said rails, each said

drop wire having at least a pair of surfaces for contacting said respective rails to complete an electrical circuit therewith; and



a plurality of signalling means, each said signalling means being electrically connected to a respective insulated section.

4,321,952

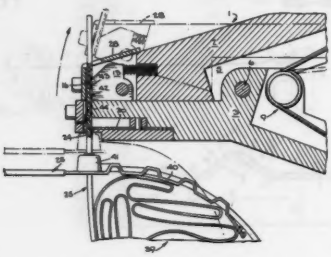
STRAP TIGHTENING HAND TOOL

Ephraim Natkins, Jackson Heights, N.Y., assignor to American Casting & Mfg. Corporation, Plainview, N.Y.

Filed Jan. 21, 1980, Ser. No. 113,729

Int. Cl.³ B21F 9/02

U.S. Cl. 140—93.2 **5 Claims**



1. A strap tightening tool for applying strap-like fasteners comprising the combination of:

a pair of handle members pivotally connected together intermediate their ends;

a pivot forming the said pivotal connection;

strap engaging and advancing means on said handles;

means for severing the strap at a predetermined strap engaging force; and

an additional strap severing means positioned for cutting an additional portion from the applied strap.

4,321,953

METHOD OF DISCHARGING AND APPLYING FLOWABLE MEDIA

Gisela Grothoff, Pulverstr. 35, D-4600 Dortmund 50, Fed. Rep. of Germany

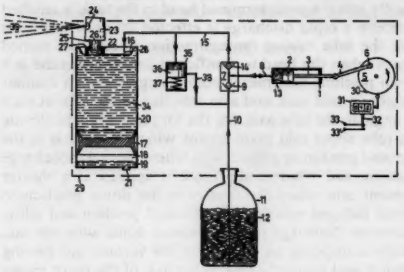
Filed Jan. 7, 1980, Ser. No. 110,387

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1979, 2901433

Int. Cl.³ B65B 3/04

U.S. Cl. 141—2 **46 Claims**

1. A method of discharging and applying flowable medium under pressure, comprising the steps of providing a charge element, and a discharge element having an outlet valve, a storage chamber of a predetermined volume and arranged for receiving the flowable medium, and a gas chamber arranged for accommodating a pressure gas medium and separated from the storage chamber by a displaceable member allowing to vary the volumes of said chambers; feeding the flowable medium from the charge element into the storage chamber of the discharge element, so that the displaceable member displaces in the direction toward the gas chamber, the volume of the storage chamber increases, the pressure gas medium in the gas chamber is compressed and thereby the flowable medium is stored in the storage chamber under pressure; discharging the flowable medium from the storage chamber of the discharge element through the outlet valve by reducing the volume of the storage chamber and increasing the volume of the gas chamber of the discharge element with displacement of the



displaceable member in the opposite direction and simultaneous expansion of the gas medium in the gas chamber of the discharge element, said feeding and discharging steps being permanently repeated; and providing a metering element for adjusting the quantity of the flowable medium fed from the charge element into the storage chamber so that said quantity is limited to said predetermined volume.

4,321,954

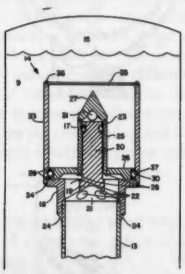
GAS PRESSURIZER

William L. Black, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 23, 1980, Ser. No. 162,351

Int. Cl.³ B65B 3/10

U.S. Cl. 141—329 **7 Claims**



1. A pressurizing system for a caustic liquid environment comprising:

a tank having a volume for containing a caustic liquid below a ullage space therein;

a standpipe connected to an external source of gas pressure and located within said volume for containing a caustic liquid and having a length chosen to terminate a predetermined distance beneath the ullage space;

a canister attached to and enclosing said standpipe having a length chosen to lie within said volume for containing a caustic liquid to form an actuator cylinder communicating with said source of gas pressure;

a thin metal diaphragm attached about its periphery to form a liquid tight seal thereby closing said canister; and

a piercing pintle having a skirt portion fitted within said canister said skirt portion being dimensioned to seal said

actuator cylinder within said canister to form a piston with said piercing pintle extending therefrom, said piercing pintle being dimensioned to fit within said canister when said skirt is in a first position adjacent said standpipe and to extend within said ullage space where said skirt is moved to a second position remote from said standpipe by the pressure of the gas in said standpipe.

4,321,955

TIRE PROTECTOR DEVICE

Hansjörg Rieger, Aalen, and Erhard Weidler, Aalen-Unterkochen, both of Fed. Rep. of Germany, assignors to RUD-Kettenfabrik Rieger & Dietz GmbH u. Co., Aalen, Fed. Rep. of Germany

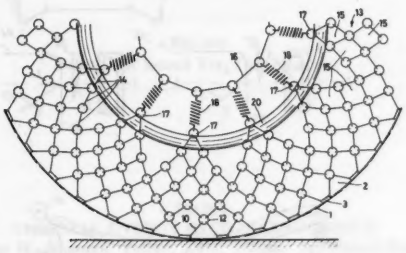
Continuation of Ser. No. 847,702, Nov. 2, 1977, Pat. No. 4,215,733. This application Oct. 15, 1979, Ser. No. 84,586

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1976, 2651162; Nov. 5, 1976, 2651163

The portion of the term of this patent subsequent to Aug. 5, 1997, has been disclaimed.

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—171 **9 Claims**



1. A tire protector device for protecting tires inflated at relatively low air pressure and thereby subject to high deformity, said device being mountable on a tire and wheel flange adjacent thereto, said device including:

(a) a cover for protecting the tire tread of said tire, said cover being formed by plate-like members connected firmly to the tire;

(b) a chain net for covering the outer side wall of said tire, said chain net consisting of vertical and horizontal chain links arranged together to form a plurality of polygons;

(c) first means for connecting said chain net to said cover, said first means being positioned beneath the underside of the plate-like members in a region of said members that projects over the side wall of the tire;

(d) a holding strand;

(e) second means for connecting said chain net to said holding strand for enabling and equalizing the displacement of said chain net resulting from the deformation of said tire, said second means being positioned between said holding strand and said chain net;

(f) said second means comprising prolongations of the chain net, each of which prolongation is formed by at least three polygons and tapers in like a roof, the number of prolongations being less than the number of said plate-like members covering the tire tread;

(g) said second means further comprising connecting elements connecting said peaks of the prolongations of the chain net to the holding strand;

(h) said connecting elements rendering relative movements between said peaks and said holding strand possible.

4,321,956

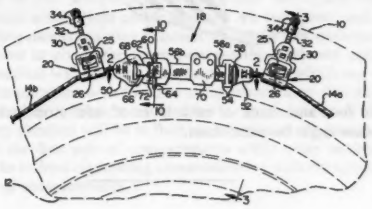
BELT ATTACHMENT FOR TIRE CHAINS

Rene J. Martinelli, 1905 Hill House Dr., Clackcamas, Oreg. 97015

Continuation-in-part of Ser. No. 3,273, Jan. 15, 1979, Pat. No. 4,280,545. This application Feb. 19, 1980, Ser. No. 122,195

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—222 **2 Claims**



1. In a tire chain,

a tire chain lateral member adapted to extend adjacent a lateral side of a vehicle tire,

a first lug secured to a first end of said lateral member,

a second lug secured to a second end of said lateral member, said second lug having a slot,

a belt having a first end secured to said first lug,

and a buckle for location along said lateral side of said vehicle tire, said buckle having an aperture therethrough and a hook on one end thereof turned back at an acute angle to a laterally outwardly facing side of said buckle, wherein said hook is adapted for reception through the slot in said second lug when said tire chain is secured to said tire,

a loop of said belt between first and second ends thereof extending through the aperture of said buckle from the inwardly facing side of said buckle adjacent the lateral side of said tire, said buckle including a slidable member passing through said loop for holding said loop in releasably secured relation to said buckle when the second end of said belt is drawn up,

wherein the second end of said belt extends from said buckle toward said first end when said tire chain is secured to said tire while being movable laterally outwardly for rotating said buckle and rapidly releasing said hook from said second lug to release said tire chain from said tire.

4,321,957

BEAD CONSTRUCTION FOR TUBELESS TIRES

Friedrich W. Hahn, Nachrodt-Wilblingwerde, and Dieter Meyer, Hemer, both of Fed. Rep. of Germany, assignors to Hahn GmbH & Co., Nachrodt, Fed. Rep. of Germany

Filed Oct. 2, 1980, Ser. No. 193,082

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940221

Int. Cl.³ B60C *15/04*; B29H *17/32*

U.S. Cl. 152—362 R **8 Claims**

1. In a tubeless tire for a steep-shoulder felly for truck and

heavy duty wheels, in which the felly has a felly bed inclined at an angle of about 15° to the wheel axis, said tire having beads received in said felly and provided with bead cores comprising steel strip embedded in rubber along the bead, the improvement wherein at least one of said bead cores comprises a plurality of nested annular layers of steel strip, each of said layers of steel strip being bent into a generally L-shaped profile having an outwardly open concavity defined between an axially inner relatively short foot and an axially outer relatively long shank,

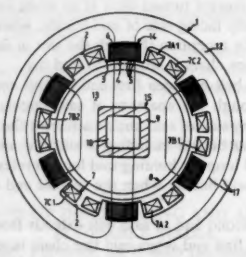
said foot and shank of each layer of steel strip including an obtuse angle between them.

4,321,958

ELECTROMAGNETIC INDUCTOR FOR GENERATING A HELICAL FIELD

Jean Delassus, Montmorency, France, assignor to Cem Compagnie Electro-Mecanique, Paris, France

Filed Jan. 16, 1980, Ser. No. 112,701
Claims priority, application France, Jan. 30, 1979, 79 02274
Int. Cl.³ B22D *27/02*
U.S. Cl. 164—468 **7 Claims**



1. An electromagnetic inductor for generating a helically moving magnetic field in a cylindrical volume through the superposition of a rotating flux and an axially moving flux, comprising:

a first magnetic circuit for generating a rotating magnetic flux including:

an annular core having a plurality of circumferentially spaced teeth on the internal surface thereof, wherein at least two adjacent teeth are partially hollowed to provide axial grooves,

a first polyphase induction winding having coils disposed in the spaces between said teeth;

a second magnetic circuit for generating an axially moving magnetic flux including:

a plurality of bars respectively disposed in the axial grooves provided by said hollowed teeth parallel to the axis of rotation of the rotating magnetic flux and insulated from said teeth,

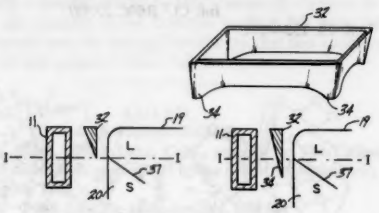
a second polyphase induction winding having a plurality of cylindrical, axially spaced coils coaxial with said first magnetic circuit and disposed within the cylindrical volume defined by said teeth.

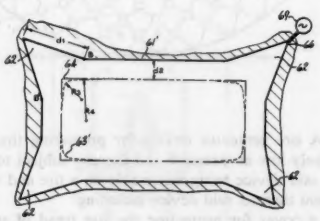
4,321,959

ELECTROMAGNETIC CASTING SHAPE CONTROL BY DIFFERENTIAL SCREENING AND INDUCTOR CONTOURING

John C. Yarwood, Madison; Gary L. Ungarean, Woodbridge; Derek E. Tyler, Cheshire, all of Conn., and Gerhart K. Gaule, Elberon, N.J., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 56,463, Jul. 11, 1979, abandoned. This application Nov. 23, 1979, Ser. No. 96,763
Int. Cl.³ B22D *27/02*
U.S. Cl. 164—467 **37 Claims**





1. In an apparatus for electromagnetically forming a molten material into a longitudinally extending casting defining a longitudinal axis thereof, said casting having a desired shape with at least one transverse portion of the outer peripheral surface of said casting extending transversely of said axis having a small radius of curvature, said apparatus including means extending transversely about said molten material for providing an electromagnetic containment force field acting on the outer peripheral surface of said molten material to form said desired shape, said apparatus including screening means extending transversely about said molten material, the improvement wherein:

screening means are provided for reducing more of the containment force at said outer peripheral surface of said molten material in at least one transverse portion of said electromagnetic containment force field as compared to an adjacent transverse portion of said field, and wherein said at least one transverse portion of said force field providing said reduced containment force is arranged to

form said at least one transverse portion of the outer peripheral surface of said casting having a small radius of curvature.

11. In an apparatus for electromagnetically forming a molten material into a longitudinally extending casting defining a longitudinal axis thereof, said casting having a desired shape with at least one transverse portion of the outer peripheral surface of said casting extending transversely of said axis having a small radius of curvature, said apparatus including means, comprising an inductor, extending transversely about said molten material for providing an electromagnetic containment force field acting on the outer peripheral surface of said molten material to form said desired shape, the improvement wherein:

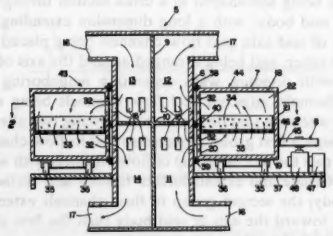
said inductor includes at least one transversely extending portion which is recessed as compared to an adjacent transversely extending portion so as to provide a reduced containment force at said outer peripheral surface of said molten material in at least one transverse portion of said electromagnetic containment force field as compared to an adjacent transverse portion of said force field and wherein said at least one transverse portion of said force field providing said reduced containment force is arranged to form said at least one transverse portion of the outer peripheral surface of said casting having a small radius of curvature.

4,321,960
Patent Not Issued For This Number

4,321,961
THERMAL ENERGY EXCHANGING DEVICE

Klaus H. Hemsath, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Nov. 10, 1980, Ser. No. 205,840
Int. Cl.[3] F28D *19/04*
U.S. Cl. 165—8 18 Claims



1. In combination:

(a) a stationary, hollow, elongated cylindrical member which has a vertically disposed outer cylindrical wall and which is sealingly divided longitudinally and transversely into at least four separated compartments, a first pair of spaced, longitudinally extending compartments relative to the longitudinal axis of the stationary member, being designed to communicate with each other, and a second pair of spaced, longitudinally extending compartments designed to be in communication with each other, the compartments each having at least one opening in the outer cylindrical wall of the member;

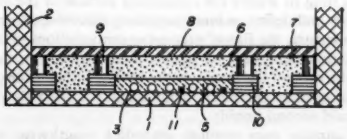
(b) a hollow, closed torus-shaped member mounted for rotation in a horizontal plane about the stationary member, the rotary member having a vertically disposed inner cylindrical wall which is radially spaced exteriorally of the outer cylindrical wall of the stationary member, relative to the longitudinal axis of the stationary member, and an annular enclosure which extends from the inner cylindrical wall and which is sealingly divided longitudinally into a plurality of vertically disposed generally pie-shaped sections, each of which sections has at least one pair of vertically spaced openings in the inner cylindrical wall, between which openings is located material that divides each of the sections transversely into two parts and through which fluid passes between the two parts; and

(c) sealing means coacting between the rotary and stationary member to divide the space between the inner and outer cylindrical walls into at least four segments which are in communication with the four compartments, so that during rotation of the rotary member certain sections of the rotary member will be in fluid circulating communication with the first pair of compartments while other sections will be in fluid circulating communication with the second pair of compartments.

4,321,962
SUB-BASEMENT SENSIBLE HEAT STORAGE FOR SOLAR ENERGY

Francis D. Doty, 1440 Bonner Ave., Columbia, S.C. 29204

Filed Apr. 8, 1980, Ser. No. 138,297
Int. Cl.[3] F24D *11/00*; F28D *21/00*
U.S. Cl. 165—18 8 Claims



1. A system for the storage of heat or cold in the earth below a concrete slab, uninsulated from beneath, forming the lowest floor in a building, said system including

a working fluid heat exchanger immediately above and in thermal contact with said slab,

a layer of heat absorptive material substantially covering said exchanger,

a layer of heat insulating material covering said heat absorptive material and extending horizontally beyond said exchanger so as to form an insulated peripheral margin,

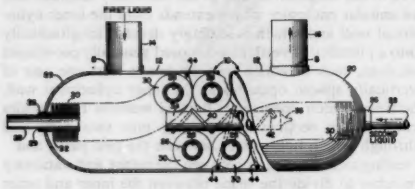
a second floor above said insulating material with suitable support means disposed between said slab and said second floor.

4,321,963

SINGLE LAYER VOLUTE HEAT EXCHANGER

Donald R. Bowden, Huntsville, Ala., assignor to Solar Unlimited, Inc., Huntsville, Ala.

Filed Jul. 5, 1979, Ser. No. 55,128
Int. Cl.[3] F28D 7/02
U.S. Cl. 165—70 2 Claims



1. A heat exchanger for transferring heat between a first liquid comprising a viscose silicone oil and a second liquid, comprising:

a heat exchanger shell member comprising a cylindrical central portion having an inner surface extending between two end portions which respectively include an inlet duct and an outlet duct for said first liquid;

a preformed volute member comprising tube means having outwardly extending fins, the volute member being located within the shell member and the tube means extending through the end portions of the shell member and being sealed thereto, the volute member comprising a single layer of multiple helical convolutions of predetermined pitch whose fins define an outer periphery which is a snug fit within the cylindrical portion of the shell member and define an inner periphery circumscribing a central aperture, the fins of successive convolutions of the helical volute being side by side in close adjacent proximity, and the ratio of the length of the wound volute to the diameter of its outer periphery being about 8:1, the volute carrying said second liquid;

an annular core member extending lengthwise within the central aperture of the convolutions and snugly fitting its inner periphery;

a first wire helix wound tightly around the core member and fixed thereto, and having the same pitch as said helical convolutions of the volute member;

a second wire helix disposed against the inner surface of said central portion of the shell and having the same pitch as said helical convolutions of the volute member, said second wire helix being made of springy wire and having a normal relaxed outer diameter greater than the inner diameter of the shell member so that it tightly contacts the inner surface of the shell member in which it is disposed, and the second wire helix being fixed at one point along its length to an adjacent fin convolution; and

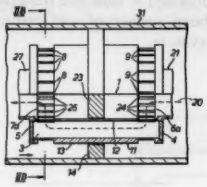
the fins substantially touching the shell member and the core member, and the diameters of said fins being at least eight times greater than the diameters of the wires forming said helix wires.

4,321,964

RECUPERATIVE HEAT EXCHANGER OF CERAMIC MATERIAL

Siegfried Förster, Alsdorf; Axel Krauth; Horst R. Maier, both of Bavaria, and Hans J. Pohlmann, Marktredwitz, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit Berschrankter Haftung, Rosenthal Technik AG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 9,866, Feb. 7, 1979, abandoned. This application Jun. 1, 1979, Ser. No. 44,761
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805817; United Kingdom, Feb. 2, 1979, 3644/79
Int. Cl.[3] F28D 9/02
U.S. Cl. 165—165 11 Claims



1. A recuperative heat exchanger, comprising:

an elongated body comprised of ceramic material and having a longitudinal axis; said body having an outer surface spaced away from said axis;

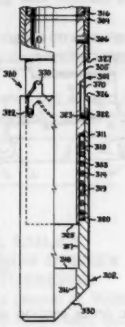
a plurality of flow channels extending through said body along the axis of said body for flow of fluid medium through said channels axially of said body; each said flow channel being slot-shaped in a cross section through the axis of said body, with a long dimension extending outwardly of said axis; said flow channels being placed next to each other, and being arranged around the axis of said body; with dividing walls separating neighboring said flow channels; adjacent said flow channels being interleaved; alternate said flow channels forming two alternating groups, a first group arranged so that its flow channels jutting past the second group of flow channels with which they alternate and extend further toward said surface of said body; the second group of flow channels extending further toward the axis of said body than the first group with which they alternate;

first inlet and outlet openings being provided for said first group of said flow channels about at the axial ends of said body, and second inlet and outlet openings for said second group of said flow channels being provided about at the axial ends of said body, whereby different media involved in heat exchange may respectively flow in said first and said second flow channels, respectively.

4,321,965
SELF-ALIGNING WELL TOOL GUIDE

Henry L. Restarick, Jefferson Parish, La., and John R. Setterberg, Jr., Dallas County, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Jul. 3, 1980, Ser. No. 165,636
Int. Cl.³ E21B *31/00*
U.S. Cl. 166—117.5 10 Claims



1. A tool guide, comprising:

a. a tubular body having means on its upper end for attachment to a tool string;

b. a guide member having its upper end telescopingly engaged with said tubular body and reciprocable relative thereto, said guide member having an inclined guide surface at its lower end;

c. coengageable means on said tubular body and said guide member for indexing said guide member about its longitudinal axis in response to reciprocal movement between said body and said guide member;

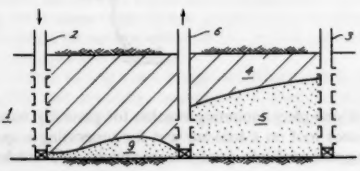
d. means biasing said guide member toward extended position; and

e. means on said body and said guide member limiting longitudinal movement between said body and said guide member.

4,321,966
HIGH VERTICAL CONFORMANCE STEAM DRIVE OIL RECOVERY METHOD

Eugene F. Traverse, and Albert D. Deibert, both of Ventura, Calif., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 17, 1980, Ser. No. 141,243
Int. Cl.³ E21B *43/24, 43/30*
U.S. Cl. 166—245 15 Claims



1. A method of recovering petroleum from a subterranean, petroleum containing formation, said formation being penetrated by at least two wells, one injection well and one production well, both of said injection and production wells being in fluid communication with a substantial portion of the formation, said injection and production wells defining a recovery zone within the formation, comprising:

(a) penetrating the formation with at least one infill well located within the recovery zone and in fluid communication with no more than the lower 50% of the formation;

(b) injecting a thermal oil recovery fluid comprising steam into the injection well and recovering fluids including petroleum from the formation by the production well until a predetermined portion of the formation has been swept by steam;

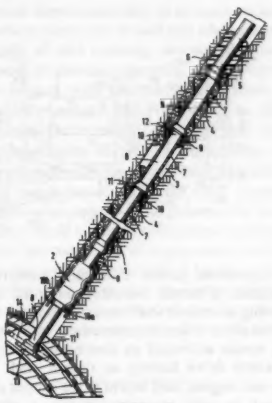
(c) thereafter recovering fluids including petroleum from the formation by the infill well; and

(d) converting the production well into an injection well and injecting thermal recovery fluid comprising steam into the converted well and recovering fluid from the infill well while injecting a fluid into the original injection well at a rate sufficient to maintain a positive pressure gradient between the injection well and the infill well.

4,321,967
SUCTION OF GASES FROM BOREHOLES IN COAL MINING

Uwe Koppe, Velbert; Walter Stegmanns, Oberhausen, and Horst Weisner, Herdecke, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Korfmann GmbH, Fed. Rep. of Germany

Filed Jul. 18, 1980, Ser. No. 171,009
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929677
Int. Cl.³ E21B *33/124, 33/134;* E21F *7/00*
U.S. Cl. 166—250 12 Claims



8. A method of withdrawing gas containing CH_4 from an undergound borehole comprising: providing a tubular casing having a leading end which terminates in a suction mouth and a trailing end and having an outer diameter smaller than the diameter of an underground borehole from which gas is to be withdrawn; inserting the leading end of the tubular casing into the borehole; sealing the leading end portion of the tubular casing to the borehole sidewall so as to permit lengthwise movement of the tubular casing along the borehole while maintaining the leading end portion of the tubular casing in sealed relationship with the borehole sidewall; positioning the tubular casing along the borehole so that the suction mouth of the leading end of the tubular casing is suitably positioned to withdraw therethrough gas with substantially the maximum CH_4 content from the borehole; sealing at least the lower part of the annular space formed between the trailing end portion of the tubular casing and the borehole sidewall with a dosed injection of liquid which expands in the annular space to form an annular foam seal; and applying suction to the tubular casing to withdraw through the suction mouth of the tubular casing leading end gas with substantially the maximum CH_4 content from the borehole.

4,321,968
METHODS OF USING AQUEOUS GELS

Elmer E. Clear, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

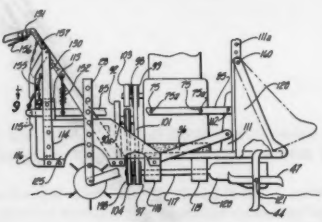
Filed May 22, 1980, Ser. No. 152,227
Int. Cl.[3] E21B 43/22, 43/267, 33/138
U.S. Cl. 166—275 8 Claims

1. In a method wherein a fluid medium is introduced into a borehole in the earth and into contact with the pores of a subterranean formation penetrated by said borehole, the improvement wherein at least a portion of said fluid medium comprises a gelled aqueous brine solution having at least 1,000 ppm divalent cations containing an effective water thickening amount of CMHEC characterized by a degree of substitution (DS) ranging from about 0.1 to about 1 and a molar substitution (MS) ranging from about 1 to about 4 and an effective gelling amount of an alkaline earth metal hydroxide.

4,321,969
GARDEN CULTIVATOR WITH REVERSING OPERATION ACTIVATED BY VERTICAL ENGINE MOVEMENT AND WITH FREELY ROTATABLE CULTIVATOR CYLINDER

Everett E. Wilson, 2822 W. Ironwood Dr., Traverse City, Mich. 49684

Filed Nov. 24, 1980, Ser. No. 209,333
Int. Cl.[3] B62D 51/04; A01B 29/04, 33/04
U.S. Cl. 172—42 17 Claims



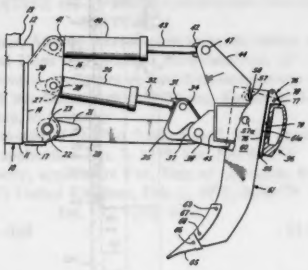
1. An improved garden cultivator comprising a tubular frame member, a handle assembly mounted thereto, and an engine having an output shaft mounted on said tubular frame in a manner to allow it limited movement in a vertical direction, reversing means activated as desired by said vertical movement, a worm drive having an output shaft drivingly connected to said engine, said worm drive output shaft adapted to be reversed by said reversing means, a plurality of tines mounted on said worm drive output shaft, an axle holding means mounted to said tubular frame member, an axle fixedly mounted to said axle holding means, a pair of wheels mounted to said axle, and at least one cultivator cylinder interposed between said wheels, said cylinder freely rotatable about said axle and having a plurality of radially extending vanes mounted thereto.

4,321,970
RIPPER APPARATUS

James L. Thigpen, P.O. Box 1786, Cleveland, Tex. 77327

Filed Aug. 7, 1980, Ser. No. 176,060
Int. Cl.[3] A01B 13/08
U.S. Cl. 172—464 10 Claims

1. Ripper apparatus, comprising body means having a pivotal connection to a support means at its forward end and being pivotally movable over an angular range of movement about said pivotal connection at other portions thereof, means supported by said support means for moving said body means over said angular range of movement, said body means having a shank pocket in the form of a slot opening of substantially uniform rectilinear cross section therethrough closely spaced from its rearward other end, said shank pocket being disposed through said body means generally vertically in the general direction of said angular range of movement, the complete side of said shank pocket toward said rearward other end of said body means being formed by a removable wear plate of uniform thickness below its upper end portion and its upper end portion having means for connecting said wear plate to said body means, a ripper blade having a shank at its upper portion

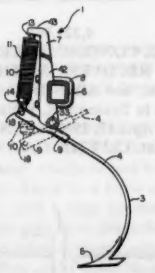


having a rectilinear cross section slightly smaller than said cross section of said shank pocket whereby said blade shank is slidable through said shank pocket, means for fixing the longitudinal position of said blade shank in said shank pocket whereby the lower end of said ripper blade may be used to rip and scarify surfaces and whereby said wear plate bears the load imposed by said shank against the lower rearward side of said shank pocket during said ripping and scarifying.

4,321,971
FIELD CULTIVATOR TOOL SUPPORT MOUNTING APPARATUS

Kenneth A. Hake, and Nelson J. Palen, both of Tipton, Kans., assignors to Kent Manufacturing Co., Inc., Tipton, Kans.

Filed Oct. 22, 1979, Ser. No. 87,016
Int. Cl.[3] A01B 61/04, 15/02
U.S. Cl. 172—710 7 Claims



1. A one-piece mounting bracket for pivotally mounting a cultivator tool on a tool bar and for supporting a spring for biasing said tool into ground engagement; said bracket comprising:

(a) a channel-shaped upright bracket member having a substantially vertically oriented web and a pair of vertically extending and outwardly projecting side flanges extending the length of said web;

(b) said bracket member having an upper connection lug for connecting the spring thereto; said connection lug projecting at an angle to the plane of said web and extending outwardly from said web in a direction opposite said side flanges said side flanges extending continuously from said

vertical web into upwardly projecting flanges along each side edge of said lug;

(c) a cutout formed in an edge portion of each of said flanges; the cutouts being substantially coextensive; the cutouts adapted for cooperatively receiving a tool bar snugly therein;

(d) a fastener receiving means in said web for receiving a fastener for attaching said bracket member to said tool bar;

(e) pivotal connection means on a lower end of said bracket member for pivotally connecting a shank of said cultivator tool thereto; and

(f) stop means on a lower end of said bracket member for limiting the pivotal motion of said cultivator tool relative to said bracket member.

4,321,972

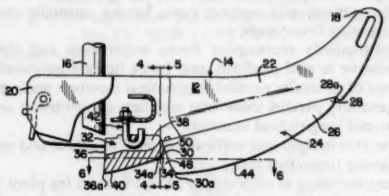
SEED PLANTER FURROW OPENER AND FOLLOWER THEREFOR

Forrest E. Robertson, and Donald E. Williams, both of Garden City, Kans., assignors to Acra Plant, Inc., Garden City, Kans.

Filed May 9, 1980, Ser. No. 148,121

Int. Cl.³ A01C *5/00*; A01B *13/00*

U.S. Cl. 172—721 **8 Claims**



8. In a planter, a runner for opening a V-shaped, seed-receiving furrow, said runner being provided with:

an elongated, transversely V-shaped, leading slicer secured thereto therebeneath, and provided with a leading and a trailing end,

said slicer having a pair of opposed sides tapering downwardly and inwardly, converging toward a relatively sharp, lowermost, longitudinal cutting edge sloping upwardly and forwardly from its trailing to its leading end,

the width of the slicer progressively decreasing as said leading end is approached; and

a wedge-like follower attached to the runner therebeneath directly and entirely behind said trailing end for maintaining the V-shape of the furrow opened by the slicer and for alleviating the adverse effects of the abrasive effects of soil on said sides and said edge,

said follower having a pair of opposed sides tapering downwardly and inwardly, converging toward a relatively sharp, lowermost cutting edge sloping upwardly and forwardly as the slicer is approached,

the width of the follower progressively decreasing as the slicer is approached,

the maximum rear widths of the slicer and the follower being substantially equal,

said edges being at approximately the same height at their rearmost extremities,

the forwardmost extremity of said edge of the follower being appreciably higher than the rearmost extremity of said edge of the slicer,

all of said sides being fully exposed for soil engagement during formation of said furrow prior to seeding therein.

4,321,973

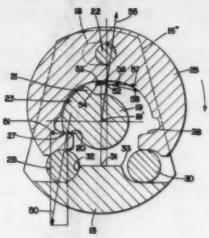
ROTARY IMPACT CLUTCH

Spencer B. Maurer, 6070 Tarawood Dr., Orlando, Fla. 32811

Filed Aug. 10, 1979, Ser. No. 65,519

Int. Cl.³ B25D *15/02*

U.S. Cl. 173—93.5 **10 Claims**



1. An impact wrench mechanism comprising:

carrier member means rotatably mounted on an axis of rotation and adapted to be driven;

centrally located anvil means rotatably and coaxially mounted within said carrier member means and having generally radially projecting jaw means with impact surface means;

hammer member means generally of an open-ended U-shape in cross-section transverse to said axis of rotation with legs on either side of said opening, jaw means connected to said legs and projecting inwardly at said opening and adapted to impact with said anvil jaw means, and said hammer member means being mounted on said carrier member means for rotation therewith and for limited linear motion relative thereto in a direction essentially transverse of said axis to allow said hammer member impact jaw means to contact said anvil impact surface means to deliver an impact blow thereto, the line of force of said impact blow having a component tending to force said hammer jaw means out of engagement with said anvil jaw means and said hammer means having a mass and a mass center location such that an inertia force is created which prevents linear motion of the hammer member means relative to said carrier member means during the impact blow.

4,321,974

ANNULAR DRILLING HAMMER

Gunter Klemm, Wenkhausen, Fed. Rep. of Germany, assignor to Hydroc Gesteinsbohrtechnik GmbH, Olpe, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 64,078

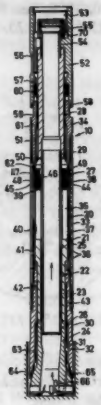
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854461

Int. Cl.³ E21B *4/14, 10/02*

U.S. Cl. 175—92 **5 Claims**

1. In an annular drilling hammer having an annular bore crown guided between an outer tube and an inner tube, an annular hammer piston striking periodically on the bore crown and having a piston part that is guided in a cylinder chamber between said inner and outer tubes, said cylinder chamber having control apertures, a reversing valve connected fluidically with the control apertures, a hollow inner tube rod system comunicating to the inner tube, the delivery of driving medium to the reversing valve being performed between the inner tube rod system and an outer tube rod system, the driving medium leaving the cylinder chamber being conducted between said outer tube and the bore crown and being discharged at the bore crown, the improvement comprising: at

least one Venturi opening in the drill string section immediately above said reversing valve extending from a passageway



for the supply of the driving medium into the inner tube rod system.

4,321,975

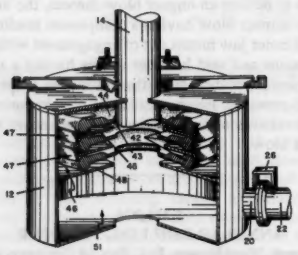
SLURRY DIVERTER

Ronald S. Dyer, Rte. 125, Barrington, N.H. 03825

Filed Jun. 2, 1980, Ser. No. 155,068

Int. Cl.³ E21B *33/03*

U.S. Cl. 175—206 **6 Claims**



1. An improved slurry diverter for use in well drilling of the type having canister containing members to prevent the escape of slurry around the drill shaft at the drill site with slurry exit means provided below such members to transport said slurry away from the drill site wherein the improvements comprise:

at least two rubber-like compression ring members having an aperture defined therein, said ring member adapted to surround said drill shaft, said ring member having a circumferential O-ring-like outer portion and a thinner inwardly protruding lip portion adapted to extend at least to said drill shaft to make contact therewith when said drill shaft is placed into the central aperture defined in said compression ring; and

means to separate compression ring members from one another comprising at least one separator member including a horizontally disposed washer-like member with a central aperture defined therein and a band member affixed to the perimeter of said washer-like member.

4,321,976

MACHINE STEPPER

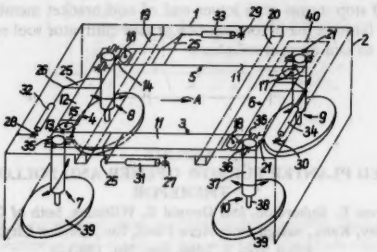
Friedrich Reinke, Gelsenkirchen, and Paul Hoever, Neukirchen, both of Fed. Rep. of Germany, assignors to FRIED. KRUPP Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Feb. 8, 1980, Ser. No. 120,105

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905793

Int. Cl.³ B62D *57/02*

U.S. Cl. 180—8 C **9 Claims**



1. A machine stepper comprising:

a machine-supporting platform having a plurality of fixed support posts by means of which said platform can stand on the ground, said support posts having normally ground-engaging lower ends;

a substantially rectangular frame underneath and shiftable relative to said platform, said frame being constituted by a pair of generally parallel longitudinal members and a pair of generally parallel transverse members connected at corners to said longitudinal members;

respective upright and vertically extensible legs at said corners having respective feet;

means including at each corner of said frame a leg pivot defining for the respective leg a horizontal pivot axis for preventing pivoting of the respective leg relative to said frame except about the respective horizontal pivot axis, two of said pivot axes extending longitudinally and the other two of said pivot axes extending transversely;

means for extending said legs between retracted positions with said feet above the level of said lower ends of said posts and extended positions with said feet below the level of said lower ends; and

means for horizontally shifting said platform on said frame, whereby said platform and said posts can be raised off the ground by said legs in said extended positions and then said platform can be horizontally displaced relative to said frame and to the ground on which it stands by the shifting means.

4,321,977

HAULING VEHICLE

Bertil Tenn, Melbavagen 5, S-170 15 Stenhamra, Sweden

PCT No. PCT/SE79/00166, § 371 Date Mar. 31, 1980, § 102(e) Date Mar. 31, 1980, PCT Pub. No. WO80/00330, PCT Pub. Date Mar. 6, 1980

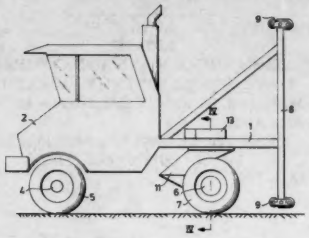
PCT Filed Aug. 6, 1979, Ser. No. 135,366

Int. Cl.³ B60P *1/00*; B62D *61/12*; B65G *7/04*

U.S. Cl. 180—12 **6 Claims**

1. A drive vehicle for hauling a movable object, comprising a rigid chassis, front wheels normally supporting the front of the chassis, steerable rear wheels beneath the back of the chassis, driving means for the rear wheels, connecting means secured to the rear end of said vehicle chassis to provide a substantially rigid interconnection between said chassis and the front end of a movable object, and vertically elevatable means supporting the chassis from said rear wheels, whereby when said vehicle is connected to said movable object and said ele-

vatable means are extended vertically the chassis will lift said front wheels from the ground when the weight of the movable



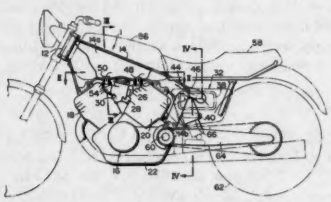
object is sufficient to counter-balance the weight of said chassis forward of the rear wheels.

4,321,978

INTAKE SYSTEM FOR MOTORCYCLE ENGINES HAVING V-SHAPED CYLINDER ARRANGEMENT

Nobuyoshi Tominaga, Hamamatsu; Nobuyoshi Kurai, Iwata; Hagime Ueno, and Sadahide Suzuki, both of Shizuoka, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jul. 13, 1979, Ser. No. 57,268
Claims priority, application Japan, Jul. 15, 1978, 53-86401
Int. Cl.³ B62K *11/08, 19/30*
U.S. Cl. 180—225 **8 Claims**



1. A motorcycle comprising a frame, an engine mounted on said frame and including at least one fore cylinder and at least one aft cylinder which are arranged in a V-shaped configuration with a laterally-extending space therebetween, each cylinder having intake port means formed at a side facing into said space, carburetor means disposed in said space and connected with said intake port means in the cylinders, said frame having a closed cavity at least at a portion which is located above the engine, said frame being formed with inlet and outlet port means respectively leading into and out of the cavity, said outlet port means being connected with said carburetor means so that intake air is passed through the cavity in the frame to the carburetor means, and air filter means for passing therethrough the intake air before it is introduced into the closed cavity, said air filter means being disposed behind the engine and mounted on the frame and said inlet port means of the frame is connected with said air filter means so that the intake air is passed from the air filter means through the cavity in the frame to the carburetor means, said air filter means being of a box type configuration having a side cover and a back wall which are connected together to constitute a closed box, said back wall being provided with air inlet and outlet ports and supporting an air filter element disposed between the inlet and outlet ports so that air is passed from said inlet port through the air filter element to the outlet port.

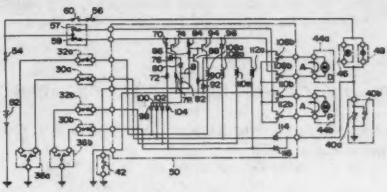
3. A motorcycle in accordance with claim **1** in which separate carburetors are provided respectively for the fore and aft cylinders and the carburetors are arranged in a side-by-side relationship.

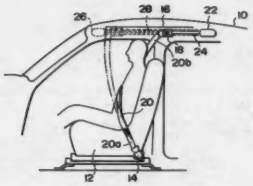
4,321,979

PASSIVE SEATBELT SYSTEM

Toshinobu Kuroyama, and Hisatoshi Ohta, both of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 27, 1980, Ser. No. 136,117
Claims priority, application Japan, Mar. 30, 1979, 54-39130
Int. Cl.³ B60R *21/02*
U.S. Cl. 180—268 **13 Claims**





1. A control circuit for a passive seatbelt system of a vehicle, said passive seatbelt system including at least one webbing, each webbing being associated with an occupant of said vehicle, for restraining said occupant in an emergency situation; a webbing drive motor associated with each webbing for moving the associated webbing into one of two positions, said positions being a fastened position and a released position; and a switching system for indicating which one of a plurality of situations characterizes each of said at least one webbing, said situations being (1) secured in said fastened position, (2) secured in said released position, (3) movement required toward said fastened position, and (4) movement required toward said released position; said control circuit comprising:

a current switching circuit;

a biasing circuit coupled to said current switching circuit and responsive to said switching system for turning ON said current switching circuit when either of said situations (3) and (4) occur in the characterization of any of said at least one webbing, and for turning OFF said current switching circuit when neither of said situations (3) and (4) occur in the characterization of all of said at least one webbing;

a relay circuit having respective portions coupled to each drive motor, each respective portion being responsive to said switching system, when said current switching circuit is in an ON condition, for supplying current in one direction to the associated drive motor in response to said situation (3); for supplying current in another direction to the associated drive motor in response to said situation (4); and removing current from the associated drive motor in response to said situations (1) and (2), said relay circuit comprising at least one pair of relay coils, each of said coils having one end thereof connected to one another and to an output of said current switching circuit, and having the other end thereof connected to respective outputs of said switching system, and at least one pair of relay actu-

ated switches, each associated with a respective relay coil and responsive to excitation thereof for switching an associated terminal from ground to a current source, wherein the respective terminals of each of said at least one pair of relay actuated switches are connected to respective terminals of an associated drive motor for controlling the application of current thereto; and

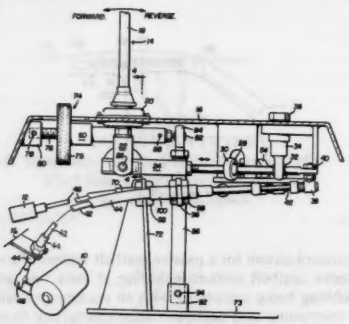
an alert circuit including a warning device and at least one release indicating switch, each being associated with one webbing; said alert circuit being responsive, when a propulsion system of said vehicle is actuated, to one or more occurrences, said occurrences including the manual release of the restraining function of said webbing as indicated by any of said at least one release indicating switch and the presence of said situation (3), for indicating a failure of the restraining function of a webbing.

4,321,980

MONO STICK ASSEMBLY WITH ADJUSTABLE CREEP CONTROL

Roland N. Nissen, Wichita, Kans., assignor to J. I. Case Company, Racine, Wis.

Filed Jul. 14, 1980, Ser. No. 167,894
Int. Cl.³ B60K *41/00*; G05G *9/04*
U.S. Cl. 180—333 **7 Claims**



1. A control system for a hydrostatically operated earthworking machine having plural hydraulic circuits, said control system controlling ground speed, forward and reverse movement, steering, and braking for said machine, said control system comprising:

a mono stick assembly including a manually operable handle assembly mounted within a resilient pivot bushing which permits pivotal movement of said handle assembly in any direction, a rod assembly pivotally connected to one end of said handle assembly, said rod assembly being mounted to a universal pivot means, said universal means permitting longitudinal sliding movement of said rod assembly and pivotal movement of said rod assembly in response to selective pivotal movement of said handle assembly;

a first cable assembly pivotally mounted at one of its ends to said rod assembly, the other end of said cable assembly mounted to a hydraulic propulsion pump;

a second cable assembly operably connected to said rod assembly by a lever assembly, and one end of said second cable assembly being connected to a steering valve, said rod assembly being mounted for slidable movement through one end of said lever assembly;

said rod assembly being movable longitudinally through said one end of said lever assembly and said universal means in response to selective pivotal movement of said handle assembly in a first direction to extend or retract said first cable means thereby actuating said propulsion pump for controlling forward and reverse movement and ground speed of said machine; and

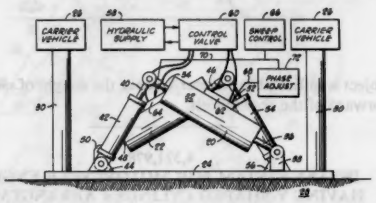
said rod assembly being pivoted about said universal means in response to selective pivotal movement of said handle assembly in a second direction, transverse to said first direction, to extend or retract said second cable means thereby actuating said steering valve.

4,321,981

COMBINATION SHEAR WAVE AND COMPRESSIONAL WAVE SEISMIC ENERGY VIBRATOR

Kenneth H. Waters, Oakland, Calif., assignor to Conoco, Inc., Ponca City, Okla.

Filed Feb. 11, 1980, Ser. No. 120,502
Int. Cl.³ G01V *1/133*, *1/143*
U.S. Cl. 181—119 **14 Claims**



1. A method for simultaneous inducement of shear and compressional seismic waves into an earth medium, comprising:

inducing vibration to an earth coupled baseplate along a first axis disposed at a first angle in a plane transverse to the baseplate; and

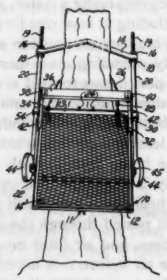
simultaneously inducing vibration to said earth coupled baseplate along a second axis disposed at a selected second angle in a plane transverse to the baseplate and parallel to said first mentioned plane and oriented opposite to sid first angle such that both a vertical and horizontal vibration component is coupled into said earth medium.

4,321,982

TREE CLIMBING-HUNTING AND GAME CART DEVICE

Robert E. Strickland, 2702 Dakota Ave., Flint, Mich. 48506

Filed Jun. 23, 1980, Ser. No. 162,012
Int. Cl.³ A01M *31/02*; A47C *9/10*
U.S. Cl. 182—20 **9 Claims**



1. A tree climbing and game carting platform, comprising:

a platform elevatable to a raised position on a tree trunk;

a v-shaped portion forwardly mounted on said platform for engaging said trunk about its further side; and a secure attachment means mounted on the edge of said platform proximate said trunk and also engagable about its further side said attachment means comprising a chain, a tension applying means coupled between one end of said chain and said platform edge, and a retainer for holding the other end of said chain to said edge, said v-shaped portion

including a pair of wheels mounted on it and pivotably mounted on said platform for movement intermediate a forward trunk gripping position and a rearward came carting position.

4,321,983

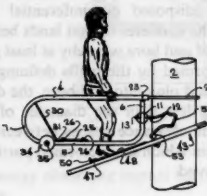
CLIMBING APPARATUS

Charles W. Nelson, 19 Cane Bend Dr., Haughton, La. 71037

Filed Jan. 31, 1980, Ser. No. 117,110

Int. Cl.³ A01M *31/02*; A45F *3/26*; A47C *9/10*

U.S. Cl. 182—136 **19 Claims**



1. A climbing apparatus comprising:

(a) a pair of generally vertically oriented side frames disposed in spaced relationship, said side frames each shaped to form a top horizontal member; a bottom horizontal member in essentially parallel relationship to said top horizontal member; a front vertical member; and a rear vertical member in essentially parallel relationship to said front vertical member;

(b) a wedge support slidably attached to said front vertical member of each of said side frames at the forward ends of said side frames;

(c) at least one wedge secured to said wedge support and facing forward of said side frames;

(d) a seat attached said bottom horizontal member of each of said side frames; and

(e) a rounded engaging bar removably attached to said top horizontal member of each of said side frames and adapted to encircle and engage a tree when said wedge contacts said tree and weight is applied to said seat, and a first plurality of apertures provided in spaced relationship in said engaging bar and at least one second aperture in said top horizontal member of each of said side frames, and engaging pins for registering with selected ones of said first plurality of apertures and said at least one second aperture to removably secure said engaging bar to said top horizontal member on said side frames and position said wedge against the tree.

4,321,984

FLOATING-CALIPER SPOT-TYPE DISC BRAKE

Jochen Burgdorf, Offenbach-Rumpenheim, and Karl Störzel, Sprendlingen, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jan. 23, 1980, Ser. No. 114,487

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1979, 2907516

Int. Cl.³ F16D *55/18*

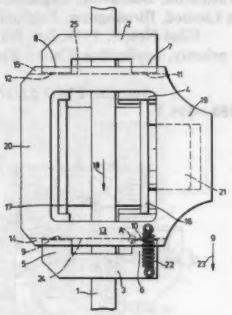
U.S. Cl. 188—73.39 **5 Claims**

1. A floating-caliper spot-type disc brake comprising:

a rotating brake disc having an axis of rotation and a main direction of rotation;

a non-rotating brake carrier fixed in position on one side of said disc, said carrier having a pair of arms extending over the edge of said disc, each of said pair of arms having guiding surfaces parallel to said axis;

a brake caliper disposed relative to said carrier to be guided in an axially displaceable manner and directly supported in a circumferential direction of said disc by said guiding surfaces, said caliper having a pair of legs each disposed parallel to and on opposite sides of said disc, a first of said pair of legs being associated with a first of a pair of brake shoes disposed on said one side of said disc and a second of said pair of legs circumferentially supporting and axially guiding a second of said pair of brake shoes disposed on the other side of said disc, said first of said pair of brake



shoes being axially guided and circumferentially supported by said carrier; and

an arrangement to provide a force acting on said caliper adjacent said one side of said disc to press said caliper, in said main direction of rotation of said disc, without play against that one of said guiding surfaces facing opposite to said main direction of rotation.

4,321,985

CHANGE-OVER VALVE, PREFERABLY FOR A RAILWAY VEHICLE

Lars M. Severinsson, Hishult, and Ragnar Segersten, Malmo, both of Sweden, assignors to SAB Industri AB, Landskrona, Sweden

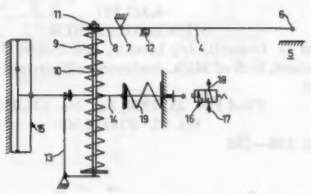
PCT No. PCT/SE78/00035, § 371 Date Apr. 26, 1979, § 102(e) Date Apr. 26, 1979, PCT Pub. No. WO79/00123, PCT Pub. Date Mar. 22, 1979

PCT Filed Aug. 25, 1978, Ser. No. 144,944

Claims priority, application Sweden, Sep. 1, 1977, 7709828

Int. Cl.³ B60T *8/20*

U.S. Cl. 188—195 **8 Claims**



1. A change-over valve for railway vehicles, and the like processing a constant fluid under pressure available at inlet means and emitting fluid at one of two different fluid pressures at outlet means in response to the load of the vehicle, comprising in combination, a mechanical system on the vehicle operative with changes of vehicle load including an operating lever arm, a valve housing, a shaft rotatively mounted in said valve housing and coupled for rotation by movement of said operating lever arm, an operating longitudinally oriented compression spring having two ends arranged substantially perpendicular to said shaft, a retaining member confining one end of said spring, a knee lever pivotable about a knee and having thereon movable therewith a first lever arm engaging the other end of said spring and a second lever arm, a valve with said inlet and outlet means, a valve operating rod positioned substantially

perpendicular to said spring to operate said valve to produce said two different pressures and coupled for this purpose for movement by the second lever arm said knee lever.

4,321,986

BRAKE ACTUATORS

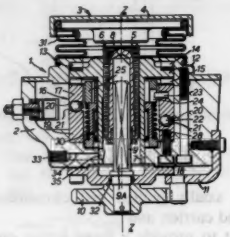
John S. Thistleton, Bournville, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Nov. 5, 1979, Ser. No. 90,973

Claims priority, application United Kingdom, Nov. 7, 1978, 43526/78

Int. Cl.³ F16D 65/56

U.S. Cl. 188—196 F 10 Claims



1. A brake actuator comprising: an output tappet fixed against rotation and having a screw-threaded stem; a sleeve member having an axial screw-threaded bore in screw-threaded engagement with the stem of the output tappet; an operating mechanism comprising a fixed member and a movable member which, upon rotation relative to the fixed member, applies an axial force to the sleeve member to axially advance the sleeve member and the output tappet as a unit; and an adjusting mechanism for rotating the sleeve member relative to the output tappet and thereby advancing the output tappet relative to the sleeve member, the adjusting mechanism including a spring one end of which is movable by the movable member of the operating mechanism and the other end of which is coupled to the sleeve via a one-way clutch capable of driving the sleeve in the direction tending to advance the tappet.

4,321,987

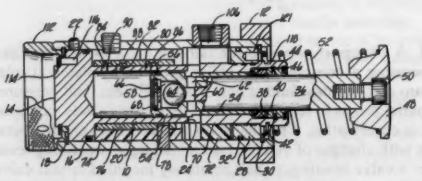
SHOCK ABSORBER

Richard G. Dressell, Jr., Livonia, and Robert J . Heideman, Westland, both of Mich., assignors to Enertrols, Inc., Livonia, Mich.

Filed Feb. 25, 1980, Ser. No. 124,036

Int. Cl.³ F16F 9/48

U.S. Cl. 188—285 5 Claims



1. A shock absorber comprising:

a tubular cylinder defining a fluid pressure chamber therein;

a piston having a piston head slidably fit within said cylinder;

means for causing flow of fluid into and out of said cylinder in response to movement of said piston head in said cylinder in respective directions therein;

means slidably mounting said piston for said slidable movement in said cylinder;

said piston further including a rod portion of smaller diameter than said piston head, said rod portion extending out of said cylinder and exteriorly of said shock absorber;

said piston and rod being of two piece construction and including means for connecting said piston head and rod together to form a unitary member;

said connecting means including a bore defined in one of said piston head and rod and a plug on the other of said piston head and said rod, said plug being insertable in interference relationship within said bore and including a plurality of alternately disposed circumferential lands and grooves thereon, the diameter of said lands being greater than the diameter of said bore whereby at least portions of said lands are deformed by the walls defining said bore upon insertion of said plug into said bore, the diameter of said grooves being less than the diameter of said bore whereby to provide clearance spaces between said plug and said walls within which said deformed portions of said lands may be received.

4,321,988

FIXING DEVICE FOR TELESCOPIC SHOCK-ABSORBER

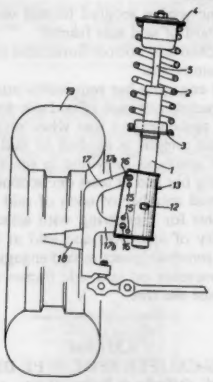
Rene Bich, Maisons-Laffitte, France, assignor to Societe J.G. Allinquant, Gentilly, France

Filed Sep. 28, 1979, Ser. No. 79,937

Claims priority, application France, Sep. 28, 1978, 78 27790

Int. Cl.³ F16F 9/54

U.S. Cl. 188—322.11 2 Claims

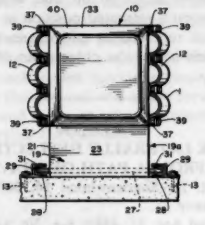


1. For a vehicle a suspension of the kind comprising a telescopic hydraulic shock absorber arranged between the vehicle frame and the individual wheels, said shock-absorber having two concentric tubes of which the inner tube is the working chamber with reciprocating piston, while the outer tube forms the casing of the absorber, said shock-absorber being associated with a ferrule having the form of a semi-collar clamped on said outer tube, said ferrule being provided with means for securing it to the axle of a wheel, means for securely affixing said ferrule to the exterior of said outer tube for preventing rotation and slidable movement of said ferrule relative to said outer tube including the feature of said outer tube having at least an outer projection embossed therein, while the ferrule is provided with an aperture having the same shape as said projection and adapted to receive it when the ferrule is clamped on the said outer tube.

4,321,989
ENERGY ABSORBING IMPACT BARRIER

Lester N. Meinzer, Sacramento, Calif., assignor to Meinco Mfg. Co., Sacramento, Calif.

Filed Jan. 22, 1980, Ser. No. 114,210
Int. Cl.³ F16F 7/12
U.S. Cl. 188—377 11 Claims



1. An energy absorbing impact barrier for a fixed structure comprising:

(a) a collapsing energy absorbing and dissipating means comprising at least one crash cushion cell positioned in an ordered array extending forwardly,

(b) one of a plurality of upstanding headers disposed on opposite ends of the array and between each of said cells, said headers having a main plate and a pair of opposed flanges normal to said plate, each flange having an aperture therein in coplanar alignment with the aperture on the corresponding opposed flange.

(c) brackets for the disposition of said crash cushion cells mounted on at least one side of said main plates, said cells being disposed upon said brackets,

(d) an elongated pin attached horizontally along the bottom of said main plate, and having two equally extending portions, each of which projects through one of said apertures,

(e) a pair of generally parallel spaced guide rails each having a channel that faces the channel of the other, each projecting ends of said pin being disposed in one of said channels,

(f) each of said headers being interconnected to the next of said headers by a pair of non-rigid lateral beams one of which beams extends from the flange of one of said headers to the flange of the next adjacent header on the same respective side of said header, and the other of which interconnects in like manner in the opposite side of said header, in overlapping relationship,

the first of which headers has a nose comprising a block of impact absorbing material mounted thereon of insufficient resiliency to bounce an impacting vehicle back into traffic.

4,321,990
HYDRODYNAMIC RETARDING BRAKE AND OIL-COOLED DRIVELINE CLUTCH

Franklin O. Koch, Jr., Edelstein, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 945,958, Sep. 26, 1978, abandoned. This application Nov. 10, 1980, Ser. No. 205,826
Int. Cl.³ F16D 67/04, 13/72
U.S. Cl. 192—13 R 23 Claims

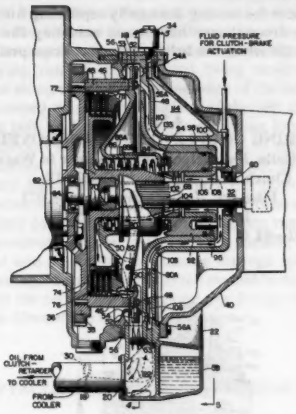
1. A hydrodynamic retarding brake and clutch apparatus comprising:

a clutch (72) having an engaged condition and a disengaged condition;

a housing (22) containing said clutch (72) and containing a fluid;

a rotatable shaft (32) operatively associated with said clutch; and

retarding means (52) in fluid communication with said clutch (72) for pumping said fluid through said clutch (72) for the

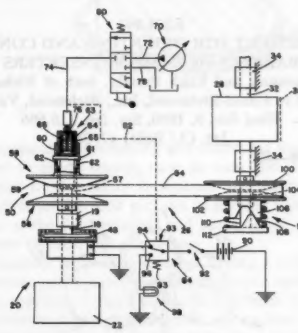


cooling thereof and for retarding rotation of said shaft (32).

4,321,991
TORQUE RESPONSIVE DISCONNECT FOR A V-BELT DRIVEN ELEMENT

Joseph A. Teijido, Silvis City, and Bernard F. Vogelaar, Moline City, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed Jan. 28, 1980, Ser. No. 115,821
Int. Cl.³ F16D 7/02, 43/20; B60K 41/00
U.S. Cl. 192—0.034 11 Claims



1. In a mobile harvester for gathering and processing crop material, having a power source and an operator's station for a harvester operator and a V-belt drive for a crop engaging element in which belt tension varies according to the loads imposed on the crop engaging element by the crop material and including a driven sheave drivingly connected to the crop engaging element and a drive sheave drivably connected to the power source and having co-axial sheave halves, each half having an inclined frusto-conical surface, said surfaces being opposed and disposed so as to define a V-groove opening towards the sheave periphery, and a V-belt trained around and connecting the drive and driven sheaves and engaging the V-groove, the tension of the V-belt pulling the belt radially inwards in the groove and creating a wedging action between the halves of the drive sheave and tending to separate them

axially with an axially separating force that varies directly with belt tension, the improvement in the V-belt drive comprising:

a protective apparatus operable to relieve belt tension in the V-belt drive; and

a transducer for sensing the axially separating force effective on the drive sheave halves and actuating the protective apparatus when the belt tension reaches a predetermined level.

4,321,992

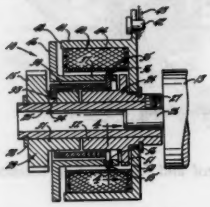
WRAP SPRING COUPLING WITH IMPROVED SPRING

Charles C. Gallo, Philadelphia, Pa., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Jul. 7, 1980, Ser. No. 166,071

Int. Cl.³ F16D *13/08, 27/10*

U.S. Cl. 192—81 C **7 Claims**



1. A wrap spring coupling comprising two relatively rotatable members, an annular control element shiftable axially relative to said members, a coiled helical spring telescoped over said members, said spring having one end connected to said control element and having its opposite end connected to one of said members, and projecting means on said spring in angularly spaced relation with said one end of said spring and connected to said control element.

4,321,993

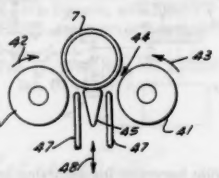
ARRANGEMENT FOR ORIENTING AND CONVEYING BARRELS OF TAMPON INSERTERS

Alfred Hinzmann, and Erich Presser, both of Richmond, Va., assignors to Hauni-Richmond, Inc., Richmond, Va.

Filed Jan. 9, 1980, Ser. No. 110,606

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—400 **14 Claims**



1. An arrangement for orienting and conveying elongated objects, especially barrels of tampon inserters, comprising means for supporting a collection of randomly oriented elongated objects, including at least one pair of substantially parallel support elements including a first and a neighboring second element, said first support element including a cylindrical engaging surface having a longitudinal axis and being mounted for rotation about such axis, said support elements being spaced apart as considered transversely of said axis to define a receiving channel for a succession of objects which are oriented in parallelism with said axis; means for rotating said first support element about said axis whereby said engaging surface of said first element frictionally engages any improperly oriented objects supported by said elements and effects reorientation of improperly oriented objects into parallelism with said axis and entry into said receiving channel; conveyor means extending into said channel and advancing in a predetermined direction along said axis to entrain the objects which are received in said channel; and means for interrupting the movement of objects with said conveyor means, including at least one lifting element mounted on said supporting means for movement between a retracted position in which it is spaced from the objects received in said channel and an extended position in which it lifts the objects out of the range of said conveyor means.

4,321,994

MEANS FOR LATERALLY DEFLECTING ARTICLES FROM A PATH OF TRAVEL

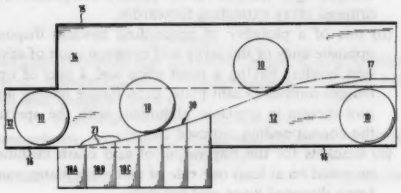
Bernhard Heuft, Im Sonnenwinkel 14, 5475 Burgbrohl, Fed. Rep. of Germany

Filed Apr. 21, 1980, Ser. No. 141,847

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917286

Int. Cl.³ B65G *37/00*

U.S. Cl. 198—436 **5 Claims**



1. Means for laterally deflecting articles selected according to a specific criterion from a first path of travel to a second path of travel of the deflected articles, said means comprising

(a) a plurality of deflecting members stationary in the direction of travel of the articles to be deflected, each of said deflecting members cumulatively deflecting the articles to be deflected by only a portion of the total deflection;

(b) said deflecting members being so arranged with respect to the direction of travel along said first path of travel (12) that the velocity component of an article (10) to be deflected transversely of the direction of conveyance is increased, but that the article, after having left the last deflective member (18*n*; 70*n*), is deflected less than the total deflection, and

(c) said deflecting members being so arranged that an article (10) to be deflected, after having left the last said deflecting means, has a velocity component transversely of the conveying direction such that it continues moving to said second path of travel (14) by inertia.

4,321,995

CONVEYING AND ACCUMULATING SYSTEM FOR ROLLING ELONGATED ARTICLES

Bryce D. Dell, Woodhaven, and Glenn B. Waineo, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 14, 1979, Ser. No. 103,812

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—459 **2 Claims**

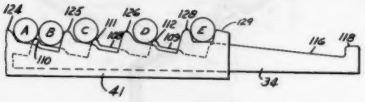
1. A conveyor for transporting and accumulating articles along its length comprising:

first rails for supporting articles having a plurality of pockets disposed along the length of said rails, each pocket sloping downwardly and toward the forward direction of transport, adapted to support at least two articles therein and having at its rear extremity a projection extending above

the forward end of the succeeding pocket to provide a stop for articles;

second rails for supporting articles having a plurality of pockets disposed along the length of said rails, each pocket sloping downwardly and toward the forward direction of transport, adapted to support at least two articles therein, and having at its rear extremity a projection extending above the forward end of the succeeding pocket to provide a stop for transported articles, the stops of said second rails being longitudinally disposed intermediate the stops of said first rails;

recesses located forward of the plurality of pockets of said second rails, each recess having a rear projection that extends above the forward end of the forwardmost pockets of said second rails and a front projection, adapted to support one article therebetween;



means for moving said second rails for cyclically raising articles from the pockets of said first rails over the rear projections thereof and onto the pockets and recesses of said second rails whereby articles may move forward after being transferred to said second rails and for raising articles from the pockets of said second rails over the rear projections thereof whereby articles may move forward after being transferred onto the pockets of said first rails, and whereby the forwardmost article in the forwardmost pocket of said first rails is transferred to the recesses of said second rails and is transferred back to its former forwardmost position on said first rails thereby preventing other transported articles succeeding the forwardmost article without vacant article support spaces therebetween from advancing along the conveyor.

4,321,996

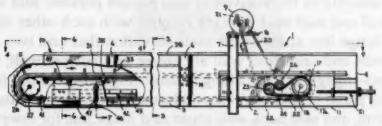
CLEATED BELT FORAGE CONVEYOR

Ernest H. Sancken, and Charlie R. Silverthorn, both of Eureka, Ill., assignors to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Continuation of Ser. No. 37,739, May 10, 1979, abandoned. This application Sep. 8, 1980, Ser. No. 185,213

Int. Cl.³ B65G *45/00, 15/42*

U.S. Cl. 198—499 **9 Claims**



9. A forage conveyor, comprising a supporting structure having a pair of spaced side walls, an endless flexible belt mounted for endless travel on said supporting structure and having a conveying run and a return run, said belt having an outer conveying surface and an inner surface, drive means for driving the belt in endless travel, a plurality of cleats extending outwardly in spaced relation from the outer surface of the belt and disposed transversely of the belt, the end portions of each cleat being formed with a slot disposed generally normal to the belt and spaced from the respective end of the cleat to divide the cleat into a central section and a pair of end sections, the central sections and the end sections extending a substantial distance outwardly from the outer surface of the belt, belt support means connected to the supporting structure for supporting the conveying run of the belt, said belt support means being spaced from the respective side walls to provide a clearance therebetween, the side edges of the belt being spaced from said side walls to provide a passage adjacent each side wall that communicates with the respective clearance, a pair of strips carried by the supporting structure and extending longitudinally of the belt and disposed above the conveying run, each strip having an extremity disposed generally normal to the conveying run of the belt and being received within aligned slots along the corresponding edge of the belt, an edge member disposed on the outer surface of the belt at each side edge of the belt, said edge members extending longitudinally between adjacent end sections of the cleats to minimize discharge of forage from the side edges of the belt, said supporting structure also including a generally flat bottom surface disposed beneath and generally parallel to the return run of the belt, the outer edges of the cleats in the return run being disposed in proximate relation to said bottom surface, any forage leaking past said edge members passing through said passages and said clearances and being collected on said bottom surface, the cleats in the return run conveying any forage on said bottom surface toward the end of the conveyor.

4,321,997

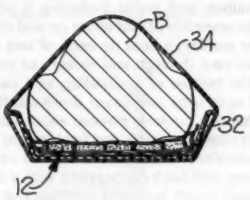
RECEPTACLE FOR MOISTURE-EXUDING FOOD PRODUCTS

Alan H. Miller, River Rd., Patterson, N.C. 28661

Continuation-in-part of Ser. No. 96,797, Nov. 23, 1979, Pat. No. 4,275,811, which is a continuation-in-part of Ser. No. 69,074, Aug. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 885,622, Mar. 13, 1978, abandoned. This application Apr. 29, 1981, Ser. No. 258,616

Int. Cl.³ B65D *81/26, 81/22*

U.S. Cl. 206—204 **4 Claims**



1. A receptacle for containing and displaying food products which tend to exude liquids, such as meat and poultry, and characterized by the ability to separate and maintain the exuded liquids from the food product to thereby minimize contamination of the food product and improve the appearance and shelf-life thereof, and comprising

a food product supporting member having a wall, and

an absorbent pad overlying and resting upon said wall, said pad comprising a mat of liquid absorbent material, an imperforate, liquid impermeable upper sheet overlying and covering said mat, and a bottom sheet of substantially liquid impermeable material underlying said mat so as to be disposed between said mat and said supporting member wall, the peripheral edges of said upper and bottom sheets being sealed together to enclose said mat of absorbent material therebetween, and said bottom sheet including a plurality of openings which are sized to permit passage of a liquid from said supporting member wall into said mat while substantially precluding reverse flow of the liquid and any associated bacteria back to the food product, and such that the liquid passes around the edges of the pad and into said mat and is confined by said pad out of contact with the food product, and

spacer means disposed between said upper and bottom sheets of said pad for maintaining the separation of said upper and bottom sheets under the compressive load exerted by a food product resting thereupon, and to

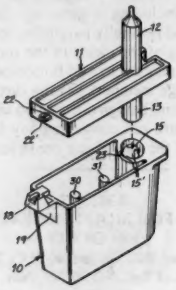
thereby minimize the compression of the mat and the reduction in the ability of the mat to absorb liquids when subjected to such load.

4,321,998

EARPLUG CONTAINER

Roger Van de Walker, El Toro, and Weston E. Draper, Jr., Diamond Bar, both of Calif., assignors to Norton Company, Worcester, Mass.

Filed Mar. 6, 1980, Ser. No. 127,710
Int. Cl.³ B65D *83/00*; A61F *11/02*
U.S. Cl. 206—229 **1 Claim**



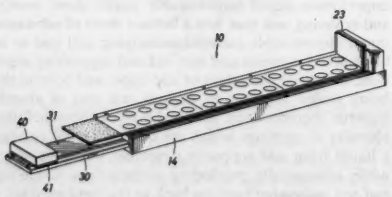
1. An earplug container having a cylindrical collar in one end thereof, and a cover, said cover being adapted to pivot about said cylindrical collar, said cover having oppositely projecting male and female inserter members each having a cylindrical portion adapted to engage said cylindrical collar in said container, said collar including a recess at the bottom thereof for assembly of said cover on said container and including a cam surface, a boss on each of said cylindrical inserter adapted to pass through said recess and engage said cam surface on the bottom of said collar, said cam surface being so arranged as to urge said cover downwardly against said container when the cover is pivoted about said cylindrical collar toward its closed position, and latch means at the opposite end of said container detent means on said cover overlying said latch means, said latch cooperating with a detent on said cover to latch said cover in closed position and to urge said cover against said container.

4,321,999

REUSABLE SURGICAL IMPLEMENTS HOLDER

Sam M. Higgins, 503 N. Rivershire, Conroe, Tex. 77304

Filed Dec. 31, 1979, Ser. No. 108,348
Int. Cl.³ B65D *83/10*
U.S. Cl. 206—370 **11 Claims**



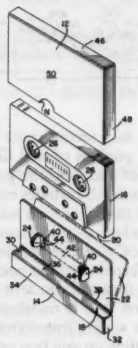
1. A holder for surgical instruments comprising:
(a) an elongate tray having a bottom and two spaced and upstanding sides extending therefrom, said tray being open interiorally therein and defining a channel-like cavity;
(b) a pair of spaced flange means, said flange means being deployed along and extending from each of said sides, said flange means defining a plane spaced from and above said bottom;
(c) an adhesive strip mountable on said flange means for retaining one or more surgical instruments; and
(d) gathering means for pressing said adhesive strip and the instruments retained thereby into an accordion-like, fan-folded package.

4,322,000

TAPE CASSETTE PACKAGES AND HOLDERS THEREFOR

Glenn E. Struble, Osford, Ohio, assignor to Diamond International Corporation

Filed Aug. 13, 1980, Ser. No. 177,671
Int. Cl.³ B65D *85/67, 85/672*
U.S. Cl. 206—387 **10 Claims**



1. A tape cassette holder comprising:
(a) an open pocket portion for receiving a tape cassette at the edge along which tape is exposed,
(b) a back flap, and
(c) reel-engaging-and-locking means extending forwardly from said back flap in the area of at least one reel hole of a tape cassette to be received in said pocket portion; wherein said pocket portion, said back flap, and said reel-engaging-and-locking means are integrally formed from a single sheet member; said pocket portion includes a bottom wall, two side walls, a front wall, and a back wall; said two side walls and said front wall extend up from said bottom wall to an elevation below that of the reel holes of a cassette to be received in said pocket portion; said back wall and said back flap are integral with each other along a hinge line at about the same elevation that said two side walls and said front wall are above said bottom wall; said reel-engaging-and-locking means being deflected out from the plane of said back flap and extending forwardly therefrom; and said back wall about said hinge line for insertion and withdrawal of said reel-engaging-and-locking means with respect to one or more reel holes in registration therewith.

4,322,001

PROTECTIVE CASE FOR A SPORTS CARD OR SIMILAR COLLECTIBLE ARTICLE

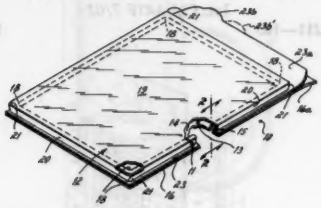
Patrick S. Hurley, 5675 Belmont Ave., Cincinnati, Ohio 45224

Filed Oct. 29, 1980, Ser. No. 202,364
Int. Cl.³ B65D *43/16, 85/48*
U.S. Cl. 206—449 **17 Claims**

1. A case for protecting a relatively thin article such as a paper collectible which may be a sports card or a photograph or a like article comprising:
a base constructed from elastic material, the base including a

peripheral boss which encircles the article when the article is placed on the base, the boss being angled outwardly at an obtuse angle, the height of the boss being less than one-quarter inch whereby typically the boss is of a height which exceeds the thickness of said relatively thin article and yet permits the placing of a relatively small number of such articles on the base within said peripheral boss, the number being dependent upon the article thickness; and

a cover constructed from elastic material, the cover including a downturned edge, the downturned edge extending



downwardly less than one-quarter inch and being angled inwardly at an acute angle so that the inwardly angled downturned edge interlocks with the outwardly angled boss when the cover is applied to the base, at least a substantial portion of at least one of said base and cover being of a substantially transparent material to permit viewing an article in the case;

whereby the base and cover snap fit together for sealing the article within a region formed between the base and cover.

4,322,002

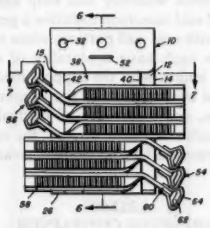
PACKAGE FOR SECURING SLOTTED SAFETY RAZORS

Clemens A. Iten, Staunton, Va., assignor to American Safety Razor Company, Verona, Va.

Filed Jun. 16, 1980, Ser. No. 159,728

Int. Cl.³ B65D *73/00*; A45D *27/29*

U.S. Cl. 206—493 **5 Claims**



1. A package for safety razors comprising:

at least one safety razor having a handle defining an elongated opening therein for receiving a package panel passing through the opening, a bridge portion extending outwardly from the handle, and a blade containing head pivotally mounted to the bridge portion;

first and second generally planar, opposing panels spaced from one another in a generally parallel relationship;

a third panel articulating between the first and second panels and adapted to prevent displacement of the razors from a corresponding first end of the package;

means for securing the first and second panels together at a second end of the package; and

the first panel adapted to pass through aligned ones of said elongated openings formed in the handles of a plurality of stack mounted razors thereby securing them to the package such that said razors are maintained by said package in a stacked presentation.

4,322,003

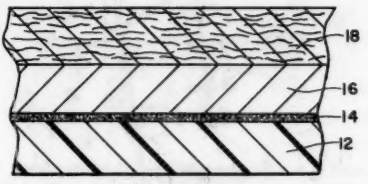
LAMINATE WITH HEAT-SEALABLE POLYESTER FOIL AND PACKAGE

Florren E. Long, Mount Vernon, Ohio, assignor to Ludlow Corporation, Needham Heights, Mass.

Filed Mar. 26, 1980, Ser. No. 134,106

Int. Cl.³ B65D *81/02*; B32B *15/08*

U.S. Cl. 206—525 **7 Claims**



1. A laminate suitable for use in forming corrosion-resistant pouches said laminate comprising a heatsealable surface formed of a heatsealable ply of non-oriented amorphous polyester film and at least one other ply, said other ply being a metal foil bonded to said heatsealable ply.

4,322,004

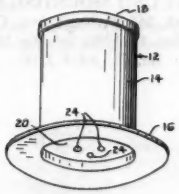
SNOWMAN HAT-KIT

Brian P. Schwuchow, 2110 W. 3rd. St., Hobart, Ind. 46342

Filed Nov. 20, 1980, Ser. No. 208,550

Int. Cl.³ A63H *3/00, 33/00*; B65D *69/00*

U.S. Cl. 206—575 **10 Claims**



1. A hat for a snowman comprising:

a crown having closures at both ends, one of said closures being removable from one of said ends of said crown, and the other of said closures being recessed in said crown spaced from the other end of said crown; and

anchor means on said other closure extending in said recess provided at said other end of said crown.

4,322,005

DISPLAY STACKER WITH BIASED PIVOTED TRAYS

David Robertson, Toms River, N.J., assignor to Displayco, Newark, N.J.

Filed Mar. 27, 1981, Ser. No. 248,201

Int. Cl.³ A47F *5/11*

U.S. Cl. 211—49 S **16 Claims**

1. A display stacker formed from reinforced paper material comprising

a base to provide support for the stacker,

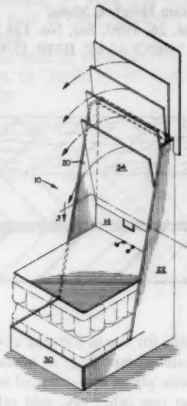
a back panel on said base and rising vertically,

side panels secured to said base and protruding outwardly from said back panel,

a plurality of trays vertically arranged along said back panel for pivotal movement between said side panels,

each said tray being secured to said back panel by a torsion spring,

said torsion spring having a pair of fingers and each said fingers having an end thereof formed into a hook, and



each said hook being passed through an end of said tray to secure said tray to said spring to permit said tray to pivot about said back panel whereby said fingers continually urge said tray upwardly toward a parallel position relative to said back panel when said tray remains unloaded and whereby said tray pivots downwardly toward a horizontal position against said spring for loading of said tray.

4,322,006

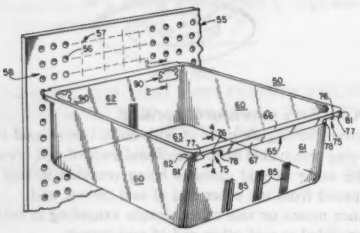
DISPLAY UNIT MOUNTING MEANS

Howard J. Marschak, 865 W. North Ave., Chicago, Ill. 60622

Filed Jan. 14, 1980, Ser. No. 111,593

Int. Cl.³ A47F *3/06*

U.S. Cl. 211—88 **11 Claims**



1. A display unit used with an apertured support for displaying a plurality of objects, comprising two fixtures each having a body portion with top and bottom edges and two spaced engagement prongs extending outwardly from said body portion at junctures spaced inwardly from said top edge and in use extending through apertures in the apertured support to mount said fixture thereto, a spacer extending from the body portion of each of said fixtures for maintaining each fixture a predetermined distance from the apertured support, a container having upstanding front, rear and side walls connnected by a bottom, and mounting means on at least one of said front and rear walls including a lip generally parallel to and spaced from the associated wall defining a channel therebetween, each of said channels being of a dimension to receive therein the body portion of said fixture between the top edge thereof and the junctures of said engagement prongs, said mounting means having notches in the lip thereof to ensure the top edge of said upstanding portion contacts the channel top surface when said container is mounted on said fixtures, the bottom edge of each fixture bearing against the associated container wall.

4,322,007

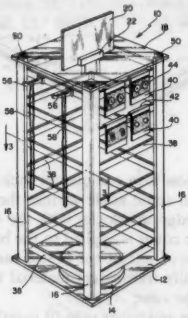
DISPLAY STAND

Jeffrey A. Feibelman, Cranston, R.I., assignor to A & H Mfg. Co., Cranston, R.I.

Filed Mar. 24, 1980, Ser. No. 133,279

Int. Cl.³ A47F *7/02*

U.S. Cl. 211—163 **12 Claims**



1. A display stand comprising a plurality of spaced, upright stanchions defining the corners of said stand, each stanchion having a first wall portion extending generally in the plane of one side of the stand and a second wall portion extending generally in the plane of the adjacent side, said wall portions being connected to each other along a vertical line defining the corner of said stanchions, an elongated strip releasably connected to each stanchion and extending for substantially the vertical extent thereof, the side edges of said strip engaging the inner surfaces of said first and second wall portions adjacent the extremities thereof whereby said strip extends angularly across the inside of said stanchion to define a generally triangular configuration with said wall portions when viewed in cross-section, said strips each have a plurality of spaced support means along their length with the support means of one strip being in horizontal alignment with the support means of the other corner strips, and a plurality of vertically spaced bars extending along each side of the display, the opposite ends of each bar being supported by said support means.

4,322,008

DRINKING CONTAINER

Ira Schneider, 2520 Bouck Ave., Bronx, N.Y. 10469

Continuation of Ser. No. 967,868, Dec. 8, 1978, abandoned. This application Apr. 29, 1980, Ser. No. 145,014

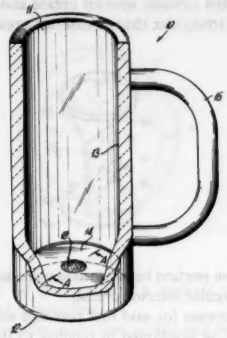
Int. Cl.³ A47G *19/22*; B65D *23/00, 25/00*

U.S. Cl. 215—1 R **2 Claims**

1. A drinking container for improving the drinking quality of beverages having dissolved gases, comprising means for inducing the release of the carbonation contained within said beverage, said means comprising a roughened surface area on the interior surface of said container, said roughened surface area being produced by a process selected from the group consisting of acid etching, sand blasting, and grinding, said roughened surface area being not less than 1%, nor more than 50%, of the interior surface area of said container, said roughened area substantially increasing the interior surface area of said container while maintaining relatively constant the interior volume of said container, said drinking container being between 6 and 12 ozs. and the roughened surface area being located at the

bottom of said container and being between 1 and 3 centimeters in diameter or the equivalent in area.

2. A drinking container for improving the drinking quality of beverages having dissolved gases, comprising means for inducing the release of the carbonation contained within said beverage, said means comprising a roughened surface area on the interior surface of said container, said roughened surface area being produced by a process selected from the group consisting of acid etching, sand blasting, and grinding, said roughened surface area being not less than 1%, nor more than 50%, of the interior surface area of said container, said roughened area substantially increasing the interior surface area of said container while maintaining relatively constant the interior volume of said container, said roughened region being formed on a separate element and means for mechanically locking said element to the interior surface of said container.

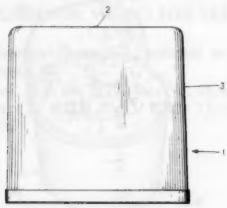


4,322,009

TAMPER PROOF MOLDED PLASTIC CLOSURE

George V. Mumford, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 19, 1980, Ser. No. 151,046
Int. Cl.³ B65D *41/32*
U.S. Cl. 215—253 6 Claims



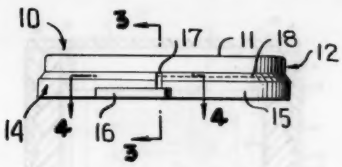
1. A tamper proof plastic closure for use on a threaded bottle neck having an external peripheral bead below the threaded portion comprising a one-piece molded cap having a circular panel portion and a depending annular skirt portion, said skirt portion having an upper internally threaded portion to cooperate with the bottle neck threaded portion and a lower band portion defining an internal shoulder expandable to snap over the container bead to lock the closure to the bottle neck, and a peripherally extending slit cut into said skirt portion above said internal shoulder by an externally applied knife, the radial depth of said slit being equal to the wall thickness of said skirt portion except at a number of peripherally spaced locations where a limited arcuate segment of said groove is of less depth than said wall thickness, thereby defining limited area bridge connections between said upper portion of the skirt and said lower band portion, said bridge connections being severable by rotational movement of said upper portion in a direction to unscrew the closure from the bottle neck.

4,322,010

TAMPER PROOF LID

John J. Curry, 2 S 752 Theresa Ct., Oak Brook, Ill. 60521

Filed Oct. 18, 1979, Ser. No. 85,975
Int. Cl.³ B65D *41/48*
U.S. Cl. 215—256 10 Claims



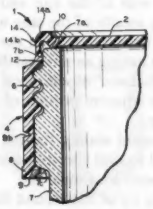
1. A tamper proof lid, said lid comprising a crown and a depending annular body having means for interlocking with a container neck finish, said annular body having a lower skirt incorporating a frangible portion, a handle secured to said frangible skirt portion and extending in a generally circumferential direction coextensive with a radially adjacent portion of said skirt, and rupturable webbing extending between said handle and said skirt for normally holding said handle to said skirt, said frangible skirt portion being defined in said skirt by two spaced generally parallel axial score weakening lines each intersecting with opposing ends of a generally circumferential hinge line.

4,322,011

SIDE SEAL CLOSURE

George V. Mumford, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 21, 1980, Ser. No. 114,032
Int. Cl.³ B65D *41/04*
U.S. Cl. 215—270 7 Claims



1. A plastic closure for sealing a container of pressured fluid, said container having a threaded neck and an external cylindrical sealing wall above the neck threads, said closure comprising a top panel section, an integral depending annular skirt section defining internal threads to cooperate with the container neck threads, an annular side sealing rib forming a series connected part of said skirt section extending inwardly from the inside surface of said skirt above said threads and having an internal surface dimensioned to form an interference fit only with said external cylindrical sealing wall of said container, means on said panel portion engaging the top of said container finish to form a top seal with the end face of the container neck, and a flexible annular wall section integrally connecting the periphery of said top panel section and said side sealing rib, said flexible annular wall section being of less thickness than said panel and said annular sealing rib, whereby increased

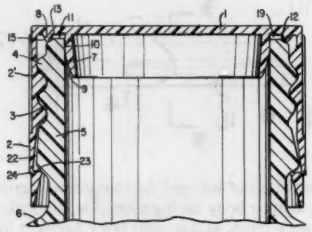
internal container pressure on said top panel section increases the radial compressing force on said side sealing rib.

4,322,012

THREADED PLASTIC BOTTLE CAP

Vincent N. Conti, West Hempstead, N.Y., assignor to Dairy Cap Corporation, Jamaica, N.Y.

Filed May 9, 1980, Ser. No. 148,555
Int. Cl.³ B65D *53/00*
U.S. Cl. 215—344 **7 Claims**



1. In a bottle cap for use with a bottle having a threaded neck opening into the bottle, said cap being constructed of flexible plastic material and having a top wall, a cylindrical side wall depending from the top wall and a thread on the inner surface of the side wall for cooperating with the thread on the neck of the bottle, the improvement comprising:

(a) a first annular sealing flange extending downwardly from said top wall for engagement with the wall surface of the bottle neck adjacent its opening into the bottle;

(b) a second annular sealing flange extending downwardly from said top wall outwardly of said first sealing flange for engagement with the top surface of the bottle neck, said second sealing flange normally having a generally triangular cross-sectional shape with inner and outer side walls extending downwardly from the top wall of the cap in a direction tapering toward each other and with the inner wall including an uppermost wall portion extending toward the side wall of the cap and a lowermost wall portion extending axially of the side wall of the cap until intersecting with the outer wall of the flange, said lowermost wall portion having an internal diameter slightly less than the outer diameter of the neck of said bottle and defining, with the adjacent portion of the outer side wall, a lower flange tip;

(c) said first and second sealing flanges being spaced from each other to seal against the cooperating surfaces of the bottle neck at spaced locations; and

(d) said lower flange tip of the second flange being of sufficient flexibility to bend radially inwardly as it engages the top surface of the bottle neck.

4,322,013

BREAKDOWN CONTAINER

Kenjiro Tanaka, 3-12-30 Chuo Kofu, Yamanashi, Japan

Filed Apr. 18, 1980, Ser. No. 141,309
Int. Cl.³ B65D *1/40, 8/12*
U.S. Cl. 220—1 R **1 Claim**

1. A breakdown cylindrical metal container capable of being folded as one unit by hand, comprising:

a cylindrical body having an upper portion, a main portion, and a bottom portion, said main portion having a first side and second side,

a circular top,

a circular bottom,

at least a first and second circular interior crease, said first circular interior crease positioned adjacent said circular top and said second circular interior crease positioned adjacent said circular bottom,

a pair of bisymmetrical axial exterior creases in said main portion on opposite sides of said body, said pair of bisymmetrical axial creases intersecting with said first and second circular interior creases; and

a first pair of generally triangular shaped exterior creases positioned in said upper portion between said circular top and said first circular interior crease and a second pair of generally triangular shaped exterior creases positioned in

said bottom portion between said circular bottom and said second circular interior crease;

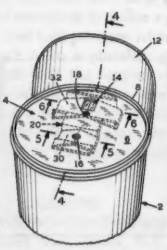
positioning means for said first pair and said second pair of creases to be positioned in relation to the intersection of said bisymmetrical axial creases with said first and second circular interior creases for defining a predetermined generally flat configuration with said main portion folded into a two thickness configuration with said first side flat against said second side and for positioning said circular top and said circular bottom in parallel relation with said first and second sides.

4,322,014

SPLASH-PROOF CONTAINER AND COVER

Morris Philip, Bronx, N.Y.

Continuation-in-part of Ser. No. 61,197, Jul. 27, 1979, abandoned. This application Apr. 22, 1980, Ser. No. 138,444
Int. Cl.³ A47G *19/22;* B65D *41/26*
U.S. Cl. 220—85 SP **14 Claims**

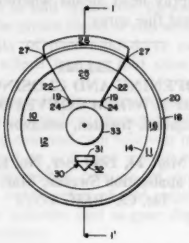


1. A splash-proof cover for a drinking cup comprising, a circular disc having a snap fitting periphery for engagement with a cup rim, an opening in said disc for dispensing liquid from said cup through said opening in said disc and a splash guard under said opening and secured to the inside of said disc, said splash guard extending across and beyond the periphery of said opening and being spaced at a fixed distance from said opening on the inner surface of said disc and sloping laterally downwardly from said opening in said disc and forming with the inner surface of said disc at least one passageway spaced laterally from the periphery of said disc opening for the flow of liquid from said cup when said cup is tipped toward said disc opening but for preventing liquid from flowing from said cup through said disc opening when said cup and said liquid therein is jarred with said cup in a vertical position.

4,322,015
CONTAINER LID

John A. Bailey, 1679 Trapelo Rd., Waltham, Mass. 02154

Continuation of Ser. No. 647,212, Jan. 7, 1976, abandoned, which is a continuation-in-part of Ser. No. 538,535, Jan. 6, 1975, abandoned. This application Oct. 5, 1977, Ser. No. 839,445
Int. Cl.[3] B65D *41/46*
U.S. Cl. 220—90.2 10 Claims

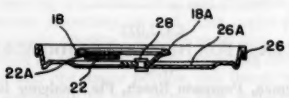


1. A container lid composed of a resilient thin polymeric sheet material and comprising:
- a central portion adapted to nest within and below the rim of a container and rim-engaging means around the entire periphery of the lid, said rim-engaging means being adapted to secure said lid to the container rim in semi-locking, manually releasable relationship therewith;
- a pair of spaced apart tear impressions extending inwardly from the edge of the container lid, each impression terminating at separate tear stop means therefor within said central portion thereof, said impressions and said tear stop means together defining a reclosable access strip having a self-forming hinge area affixing said access strip to said container lid; and
- retainer means comprising at least one protrusion molded into the surface of the central portion of the lid opposite said access strip, said retainer means being shaped and located to capture and releasably maintain said access strip in the open position.

4,322,016
PROOF-OF-PURCHASE MEANS FOR SELF-OPENING CANS

Marshall J. Barrash, Atlanta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Aug. 10, 1979, Ser. No. 65,420
Int. Cl.[3] B65D *41/32*; B21D *51/38*
U.S. Cl. 220—270 2 Claims

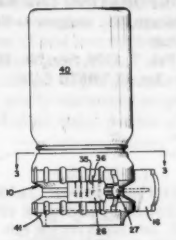


1. In a can end assembly for self-opening cans, which assembly includes a can end having a prescored opening area, and a lever arm riveted adjacent thereto having a finger engageable actuating end and a prescored area engaging opening end, the improvement comprising:
- a proof-of-purchase label means including a pressure sensitive adhesive backing affixed beneath the actuating end of said lever arm by said adhesive backing;
- said label means being inaccessible for removal until said lever arm is actuated to open said prescored area; and
- said label means being removable from said lever arm and transferrable to a storage surface pending further use or redemption thereof.

4,322,017
DISPENSING DEVICE

Charles H. Lowdermilk, 4411 Pennydale Dr., Greensboro, N.C. 27407

Filed Nov. 29, 1979, Ser. No. 98,486
Int. Cl.[3] B67D *5/22*
U.S. Cl. 222—43 9 Claims

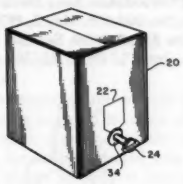


9. A dispensing device comprising: an upper material receiving portion having a base, said base having an aperture therein, a lower terminal portion having an opening therein, said material receiving portion and said terminal portion being rigidly affixed relative to each other, a central disc means, said disc means including a material conduit, said disc means rotatably positioned between said material receiving portion and said terminal portion, a center post member joined to said disc means for rotation therewith, a lever attached to and for rotating said disc means, a moveable adjusting means including a pressure plate having a dowel member joined thereto, said adjusting means proximate to and for adjustably limiting the rotation of said disc means and said disc means rotatable from a receiving to a discharging position.

4,322,018
FLUID DISPENSER

Christopher C. Rutter, 24174 Dover La., Hayward, Calif. 94541

Filed Apr. 17, 1980, Ser. No. 141,068
Int. Cl.[3] B67B *7/24*
U.S. Cl. 222—83 9 Claims



1. In combination with a bulk container having a rigid outer container and a flexible sealable inner container for the storage of liquids, a fluid dispenser comprising:
- a tubular sleeve member having at a first end a radial flange adhesively sealed to the external surface of said inner container, said sleeve member being open at its second end; and
- a tubular conduit member within said tubular sleeve member, said conduit member having its external surface in a leakage-free rotatable fit within the bore of said sleeve member and extending from the second end thereof, the first end of said conduit member having a pointed tip for piercing said inner container and at least one opening for admitting liquid from said container into the bore of said conduit member, the surface of said tubular conduit member adjacent said first end having radially extending keys

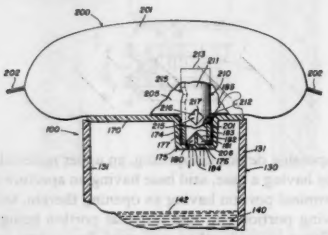
adapted to fit keyways and key channels within the bore of said tubular sleeve member for restricting particular movements of said conduit member within said sleeve member.

4,322,019

FLUID INJECTION POUCH AND DISPENSING SYSTEM INCORPORATING THE SAME

Randel P. Smith, Chicago, Ill., assignor to Steiner Corporation, Salt Lake City, Utah

Filed Feb. 7, 1979, Ser. No. 10,013
Int. Cl.³ B67B *7/24*
U.S. Cl. 222—83.5 **25 Claims**



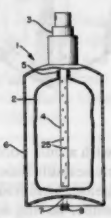
1. A fluid injection pouch comprising a flexible encompassing wall sealed to form a hollow flexible container with a quantity of fluid therein, and a hollow and generally cylindrical docking adaptor having a drain opening therein disposed away from each end thereof loosely disposed within said pouch, said locking adaptor being symmetrical about a plane normal to the axis thereof at the midpoint thereof and including an outer generally cylindrical wall and an inner generally cylindrical wall, said flexible encompassing wall being foldable about said docking adaptor to permit a user to grasp said docking adaptor to press one end thereof and an area of said flexible encompassing wall into a piercing docking adaptor device on a dispenser for connecting the interior of said fluid injection pouch with a dispenser for the contents thereof.

4,322,020

INVERTIBLE PUMP SPRAYER

Raymond Stone, 177 Woodsdale Ave., Dover, Del. 19901

Continuation of Ser. No. 902,055, May 2, 1978, abandoned. This application Jan. 7, 1980, Ser. No. 110,211
Int. Cl.³ B65D *35/28*
U.S. Cl. 222—95 **20 Claims**



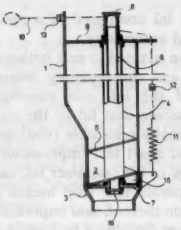
1. An invertible pump sprayer for dispensing a liquid material having a viscosity as high as 100 cps. as a fine spray regardless of the position in which the sprayer is held; said pump sprayer comprising a flexible inner collapsible container for containing the liquid material to be dispensed arranged within a protective rigid outer container, and a spray pump means operatively associated with said flexible container for dispensing the liquid material therein as a fine spray of individual liquid particles, without the formation of a liquid stream; said spray pump means including a manually-operated pump means for pumping the liquid material from said flexible container, said pump means having a pressure accumulating chamber and a pressure-actuated discharge valve for discharging liquid material from said chamber only when the pressure in the chamber is above a predetermined value, and a spray head means for atomizing the liquid material supplied by said pump means, the pump means and the pressure of the atmosphere surrounding the flexible container cooperating to collapse said flexible container and to supply sufficient liquid material under pressure to said spray head means whereby said spray head means produces said fine spray.

4,322,021

DEVICE FOR OPENING AND CLOSING THE OUTLET OF A WORM CONVEYOR

Rolf Olsson, Trangsund, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Mar. 24, 1980, Ser. No. 132,810
Claims priority, application Sweden, Mar. 22, 1979, 7902584
Int. Cl.³ B65G *47/19*
U.S. Cl. 222—231 **9 Claims**



1. A dispenser comprising a hopper, a delivery conduit leading from the hopper, said conduit having a cylindrical part and an outlet therefrom, a feed screw rotatable in said cylindrical part to deliver material from the hopper through said outlet, the feed screw having an outlet end adjacent said outlet, an element coacting with the feed screw at said outlet end and rotatable between first and second positions relative to the screw, said element in said first position closing said delivery conduit, said element in said second position performing with the screw a discharge opening through the delivery conduit, and driving means connected to said element for rotating the element from said first to said second position and thereafter rotating the screw while maintaining said element in its said second position, thereby delivering material through said discharge opening, said delivering means being operable to rotate said element from its said second to its said first position to terminate said delivery.

4,322,022

QUICK RELEASE FOR HELICALLY-THREADED DRIVE UNIT

Carl P. Bergman, Pompano Beach, Fla., assignor to Whirlco, Inc., Pompano Beach, Fla.

Filed Mar. 19, 1980, Ser. No. 131,861
Int. Cl.³ B67D *5/46*
U.S. Cl. 222—327 **4 Claims**

1. A quick release for a helically-threaded drive unit, comprising:

a helically-threaded lead screw means;

drive train means for driving said lead screw means;

said drive train means including a drive nut mounted on said lead screw means and means for rotating said drive nut;

said drive nut being an assemblage of a plurality of parts including claw means and means for moving said claw means into and out of driving engagement with the helical threading of said lead screw means, said moving means being capable of moving said claw means between an in-gear

disposition in which rotation of said drive nut necessarily causes driving of said lead screw means and an out-of-gear disposition in which said lead screw means is axially slidable relative to said drive nut;

a housing means for said drive train means, said housing means including a cradle sized to receive a replaceable cartridge of plastic material of the type which has a front end spout and a piston-like rear end wall;

said lead screw means having a forward end including a plunger disposed in said cradle for forwardly pressing engagement with the piston-like rear end wall of the cartridge;

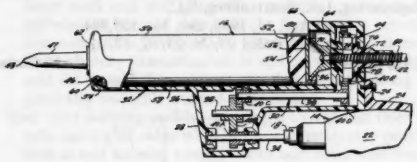
among said plurality of parts said drive nut including two major portions which enclose said claw means between them,

said means for moving said claw means into and out of driving engagement with the helical threading of said lead screw means comprising cam and cam follower means on said two major portions and on said claw means, which, upon part-circumferential reversible rotation of one of said major portions relative to the other of said major portions moves said claw means between said in-gear disposition and said out-of-gear disposition;

one of said major portions including a hub which extends out of said housing means, and outside of said housing means is provided with a hand grip wherewith said hub may be reversibly twisted to provide said part-circumferential reversible rotation;

means defining an axially rearwardly opening diametric slot on the other of said major portions, said claw means being slidingly received in said slot for radially inward/radially outward sliding therein;

said cam and cam follower means including:



axially forwardly presented spiral cam surface means extending part-circumferentially on said one major portion;

axially rearwardly presented cam follower means on said claw means;

said cam follower means being engaged with said spiral cam surface means;

means defining an axially rearwardly projecting circumferential flange on said other major portion, this flange being spaced radially outwardly of said diametric slot-defining means, thereby defining an axially rearwardly opening circumferential slot on said other major portion, this rearwardly opening slot surrounding said diametric slot;

stop key means projecting on said other major portion, into said rearwardly opening circumferential slot;

means defining an axially forwardly projecting circumferential flange on said one major portion, this flange being spaced radially outwardly of said spiral cam surface means and being coaxially rotatably received in said axially rearwardly opening circumferential slot on said other major portion;

means defining at least one part-circumferentially extending, radially facing keyway on said axially forwardly projecting circumferential flange;

said stop key means being received in said keyway, and said keyway having surface means at angularly opposite ends thereof which are arranged to be engaged by said stop key means upon such extensive relative angular movement of said two major portions of said drive nut that, as to such extensive movement in one angular sense said claw means is fully in said in-gear disposition and as to such extensive movement in the opposite angular sense said claw means is fully in said out-of-gear disposition;

said axially forwardly projecting circumferential flange on said one major portion of said drive nut further including at least one part-circumferentially extending, radially inwardly facing spiral cam surface means thereon having angularly presented stop means at a respective end of greatest radial extent thereof, this spiral cam surface means but for the angularly presented stop means being arranged for sliding contact with radially outer end surface means on said claw means, and said angularly presented stop means being arranged to engage said claw means upon said such extensive relative angular movement of said two major portions of said drive nut in said opposite angular sense;

said drive train including a ring of gear teeth circumferentially provided on said axially rearwardly projecting circumferential flange on said other major portion of said drive nut.

4,322,023

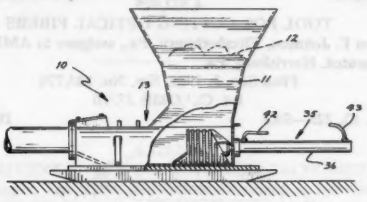
MATERIAL MOVING APPARATUS

David A. Olson, 1708 Roberts Dr., Albert Lea, Minn. 56007

Filed Jul. 16, 1979, Ser. No. 58,012

Int. Cl.³ F04B *19/04, 19/22*

U.S. Cl. 222—380 **10 Claims**



1. A material moving pump comprising:

a pump housing having interior walls defining a generally horizontally orientated pumping chamber with a rearward end having a material inlet through an upper portion of said walls and a forward end having a material outlet;

a pumping ram located in the pumping chamber and including a body portion having a front working face for movement of material in the pumping chamber transferred to the pumping chamber through the material inlet from the rearward end toward the forward end of the pumping chamber, and having side walls configured to conform substantially to the interior cross-sectional shape provided by the interior walls of the pumping chamber and spaced from the interior walls of the pumping chamber by a clearance space;

a plurality of ribs located on the walls of the ram orientated transversely to the intended direction of travel of the ram forming a plurality of grooves on the walls of said ram;

said ram having forwardly directed nose means, said nose means having means forming at least one groove open toward an interior wall of the pump housing; and

means for generally horizontal reciprocation of the ram in the pumping chamber.

4,322,024

FOOD CARRYING BELT

Thomas J. Kelly, London, England, assignor to Woolston-Kelly Survival Limited, London, England

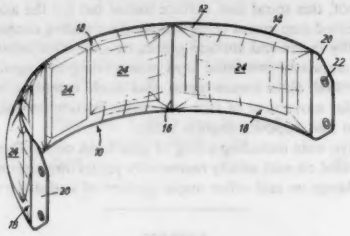
Filed May 7, 1979, Ser. No. 36,868

Int. Cl.³ A45F *3/00*

U.S. Cl. 224—224 **5 Claims**

1. A belt for carrying rations therein and for securement on the torso of a user, comprising an elongated sleeve of flexible plastic material, said sleeve being permanently sealed along the longitudinal edges thereof and being transversely sealed along the length thereof in spaced relation to define at least three air impervious pouches that must be ruptured to gain access thereto, each of said pouches receiving packages of foodstuffs

therein, wherein said foodstuffs are retained in relatively fresh condition in said pouches, and fastening means secured to the



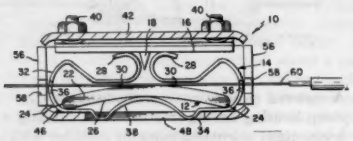
opposite edges of said sleeve for securing said belt at least partially around the torso of said user.

4,322,025

TOOL FOR CUTTING OPTICAL FIBERS

Erlon F. Johnson, Elizabethtown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 3, 1980, Ser. No. 183,776
Int. Cl.³ C03B *37/16*
U.S. Cl. 225—96.5 **18 Claims**



16. An improved tool for bending and axially tensioning a portion of at least one optical fiber, and also for scribing said optical fiber while said optical fiber is bent and axially tensioned, said tool comprising:

an anvil for bending said optical fiber, said anvil having a fiber supporting surface and a second surface opposed from said fiber supporting surface, said anvil having opposite ends, said fiber supporting surface extending between said ends as an arcuate convex surface;

a bearing surface facing toward, and normally spaced from, said fiber supporting surface;

a fiber scribing edge mounted on said bearing surface, said scribing edge being normally spaced from and transversely directed with respect to, said fiber supporting surface, movement of said scribing edge normally with respect to said fiber supporting surface defining a scribing plane;

means for gripping and tensioning said optical fiber as said fiber supporting surface and said bearing surface are relatively moved toward each other comprising an elongated plate member of flexible material which acts as a spring, said plate member formed to surround said anvil by extending from a longitudinal portion located adjacent to said second surface of said anvil, to end portions which wrap around said opposite ends of said anvil, and finally to free end portions located between said bearing surface and said fiber supporting surface and adjacent to opposite sides of said scribing plane, said longitudinal portion having a deformable concave portion to facilitate manual application of a normal force using a thumb or finger to relatively move said anvil toward said bearing surface, each said end portion having a transversely directed optical fiber receiving slot, each said free end being formed into a U-shape, the open end of said U-shape pointing away from said scribing plane, the portion of said U-shape adjacent to said fiber supporting surface being a gripping portion conformable to said fiber supporting surface; and

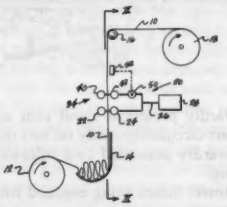
frame means comprising a four-sided hollow prismoid enclosing said plate member, said anvil, said scribing means, and said bearing surface therein, said prismoid including a top side, said bearing surface interposed between said top side and said fiber supporting surface, said bearing surface adjustably mounted to said top side, a bottom side opposed to said top side, said bottom side having an aperture to provide thumb or finger access for applying a normal force to said anvil to cause relative movement of said fiber supporting surface toward said bearing surface, a front and back side located on transversely opposed sides of said anvil, said front side having a slot through its entire longitudinal length to allow insertion of said optical fiber, and opposed ends each having a transversely directed optical fiber receiving slot which opens toward said slot in said front side.

4,322,026

METHOD AND APPARATUS FOR CONTROLLING A MOVING WEB

William O. Young, Jr., Spartanburg, S.C., assignor to Young Engineering, Inc., Spartanburg, S.C.

Filed Apr. 14, 1980, Ser. No. 139,994
Int. Cl.³ B65H *25/26, 23/02, 17/32*
U.S. Cl. 226—15 **16 Claims**



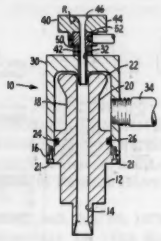
1. Apparatus for guiding a web of material during its longitudinal movement comprising means for supporting an indefinite length of web material for movement in a longitudinal path of travel; fluid pressure means positioned adjacent the path of travel of the web for intermittently directing pressurized fluid laterally across the surface of the web selectively toward one or the other of the side edges thereof to move the web laterally in its longitudinal path of travel; means positioned adjacent the path of travel of the web for detecting the lateral position of the web and for activating said fluid pressure means to selectively move the web laterally with respect to its longitudinal path of travel; said means for supporting the web for movement includes means for guiding the web in a substantially vertical path of travel past said fluid pressure means while maintaining the web in a free-hanging, relaxed condition to facilitate lateral movement of the web by said fluid directed therefrom; said detecting means comprises sensing means for detecting the position of the edge of the web without mechanical contact therewith, and said fluid pressure means includes valve means operatively associated therewith for selectively controlling the flow of pressurized fluid from said fluid pressure means toward one or the other of the side edges of the web in response to said sensing means.

4,322,027

FILAMENT DRAW NOZZLE

Imants Reba, Vancouver, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Oct. 2, 1980, Ser. No. 192,973
Int. Cl.[3] B65H *51/16*
U.S. Cl. 226—97 11 Claims



1. A filament draw nozzle comprising, in combination:

means defining a throughbore, and including an upwardly projecting annular boss, said boss having a cylindrical peripheral wall leading to a generally smoothly curved surface extending to said throughbore;

a housing defining an aperture and including an inner wall curving downwardly and leading to said aperture, said housing being positioned in engagement with said throughbore defining means with said housing aligned relative to said throughbore defining means to define a pressurizable annular air cavity therewith, said housing inner wall and said generally smoothly curved surface defining an annular downwardly directed slit providing communication between said air cavity and said throughbore whereby pressurized air in said cavity passes through said slit to said throughbore and downwardly along said generally smoothly curved surface; and

fiber inlet defining means including a cylindrical fiber feed tube having an outer wall selectively removably positionable in said housing aperture with said outer wall bearing against said housing, said throughbore and said housing aperture being disposed in alignment whereby said fiber feed tube when positioned in said aperture is concentrically disposed relative to and within said throughbore and defines with said generally smoothly curved surface a supersonic nozzle, said slit and said generally smoothly curved surface defining a Coanda nozzle directing and maintaining air flow in a downward direction through said throughbore and said housing aperture when said fiber feed tube is removed from said housing aperture.

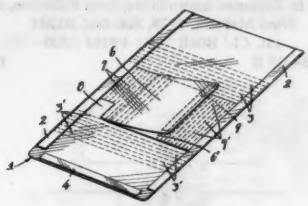
4,322,028

KNOCK-DOWN TYPE MAILING PARCEL CASE

Yoshinobu Kawahara, 1-32-8 Nishimagome, Ohta-ku, Tokyo, Japan

Filed Apr. 25, 1980, Ser. No. 143,947
Int. Cl.[3] B65D *5/02*
U.S. Cl. 229—40 8 Claims

1. A knock-down type mailing parcel case which comprises a rectangular main body having the opposite side edges inwardly folded and glued to the inner surface of said main body, first and second spaced groups of transverse folding lines on said main body adjacent to and spaced from the center of the length of the main body, each group of said folding lines including a number of parallel and spaced folding lines, and an adhesive tape having opposite adhesive surfaces one of which is secured to the inner surface of said main body adjacent to a first end of the main body; and first and second rectangular flap pieces each having one end secured to said inner surface of the main body under the associated inwardly folded side edge of the main body at the center area of the main body and the longitudinal axis thereof extending perpendicularly to the longitudinal axis of the main body, said flap pieces each having a length substantially greater than one half of the width of said main body, but slightly smaller than the full width of the main body, and a group of parallel and spaced transverse folding



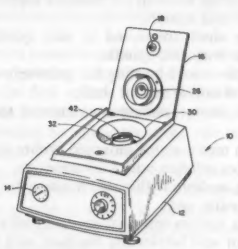
lines on each of the flap pieces adjacent to the respective secured ends thereof, and one of said flap pieces further including an adhesive tape having opposite adhesive surfaces one of which is secured to the inner surface of the associated flap piece.

4,322,029

AIR DRIVEN CENTRIFUGE HAVING A TACHOMETER

Lee Gropper, Los Altos, and Robert C. Franklin, Los Gatos, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed May 29, 1980, Ser. No. 154,732
Int. Cl.[3] B01D *21/26;* B04B *9/00*
U.S. Cl. 233—1 R 7 Claims



1. In an air driven centrifuge including an access door to a rotor chamber housing a rotor seat and a rotor having a plurality of turbine flutes formed in the underside thereof, said rotor seat including driving air jet means for impinging pressurized air streams against said turbine flutes for supporting and spinning said rotor on an air cushion above said rotor seat within said chamber, and photo-optical tachometer means, the improvement comprising:

means in said door for automatically positioning the illuminating and sensing elements of a photo-optical tachometer over said rotor when said door is in a closed position;

means on the illuminated portion of said rotor for alternately absorbing and reflecting said illumination when said rotor is rotating;

digital display means for displaying said rotor R.P.M.;

tachometer circuitry for processing and converting said reflected signals to drive said digital display means; and

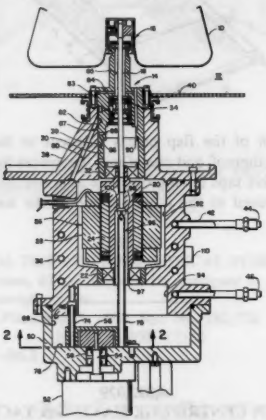
an enclosure on the outer side of said door for housing said circuit and display means.

4,322,030

LUBRICATION AND COOLING SYSTEM FOR A HIGH SPEED ULTRACENTRIFUGE DRIVE ASSEMBLY

Kenneth E. Jacobson, Fremont; William S. Gutierrez, San Francisco, and Williams G. Patterson, Palo Alto, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 14, 1979, Ser. No. 20,384
Int. Cl.³ B04B *9/00*; F01M *9/00*
U.S. Cl. 233—23 R **13 Claims**



1. A drive system for operating in a vaccum to power a rotative device, said system comprising:

a housing;

a drive spindle in driving communication with the interior of said housing;

an upper bearing housing for rotative support of the upper portion of said spindle;

an armature shaft connected to said spindle for rotative movement with said spindle;

bearing means in said housing for rotatively supporting said spindle and said armature shaft;

an induction motor armature connected to said armature shaft;

an induction motor stator mounted within said housing and in operative relation with said armature;

a lubricating medium within said housing for lubricating said bearing means; and

a circulating system self-contained completely within said housing for said lubricating medium, said circulating system operating independent of the operation of said drive spindle, said induction motor armature and stator so that the rate of circulation of said lubricating medium does not depend upon the operation of said drive spindle, induction motor armature and stator.

4,322,031

CONTROL FOR SANITARY MIXING VALVE

Kurt Gehlert, Iserlohn, Fed. Rep. of Germany, assignor to H. D. Eichelberg & Co. GmbH, Iserlohn, Fed. Rep. of Germany

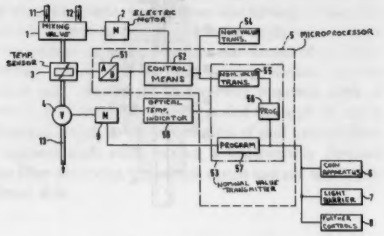
Filed Jun. 17, 1980, Ser. No. 160,250
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925234
Int. Cl.³ G05D *23/00*; D06F *33/00*
U.S. Cl. 236—12 R **4 Claims**

1. A control for a sanitary mixing valve having a mixing water control member, comprising:

an electric motor for controlling and driving said control member of said mixing valve;

a temperature sensor for monitoring the discharge temperature of the mixed water;

a microprocessor chip in the form of an integrated circuit which comprises an analog-digital converter for receiving the analog values of the sensor and converting the same to digital signals, electronic control means for receiving the digital signals from said analog-digital converter, comparing them with predetermined nominal values and controlling said electric motor based upon the corresponding value differentials a nominal value transmitter including



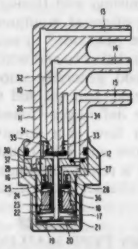
an electronic data logger, and program control means for adjusting the nominal values in a temperature and/or time dependent manner so that through the differential values between the digital measuring values and digital nominal values, the mixing water temperature is controllable in a cyclical oscillating manner about a preadjusted mean value with adjustable amplitudes.

4,322,032

THERMALLY RESPONSIVE VALVE DEVICE

Nobuyuki Hashimoto, and Atsushi Satomoto, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 23, 1980, Ser. No. 152,967
Claims priority, application Japan, May 28, 1979, 54-065813
Int. Cl.³ G05D *23/10*
U.S. Cl. 236—48 R **3 Claims**



1. A thermally responsive valve device comprising a body having first and second passages therein, first and second valve seats on said body operatively associated with said first and second passages respectively within said body, first and second snap acting bimetallic disks disposed within said housing for sensing temperature variations therein, first and second valve members disposed within said housing for direct selective contact with said first and second valve seats respectively and first and second rod means disposed between and in contact with said first and second bimetallic disks respectively and said first and second valve members respectively for transmitting movement of said snap acting bimetallic disks to said valve members for selectively opening and closing said first and second passages respectively completely independently of each other, said second valve member and said second bimetallic disk being provided with central apertures therethrough, said rod means associated with said second valve member and

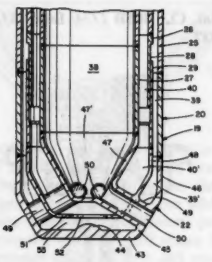
said second bimetallic disk having a hollow tubular configuration and the rod means associated with said first valve member and said first bimetallic disk extending through said apertures and said tubular member.

4,322,033

LANCE AND METHOD FOR REMOVING SKULLS FROM STEELMAKING VESSELS

Nicholas M. Rymarchyk, Wexford, and Leo L. Meinert, Baden, both of Pa., assignors to Pullman Berry Company, Harmony, Pa.

Division of Ser. No. 922,943, Jul. 10, 1978, Pat. No. 4,230,274. This application Mar. 14, 1980, Ser. No. 130,308
Int. Cl.[3] C21C 5/32
U.S. Cl. 239—132.3 11 Claims



1. For use with a metal refining vessel having a hearth portion adapted to contain a molten metal charge and a nose section thereabove containing an opening through which the vessel is charged, the improvement of a lance extending said opening for injecting an oxidizing gas from said lance against an inner wall of said nose section to prevent and remove nose skull buildup comprising:

an outer pipe assembly,

an inner pipe assembly,

an intermediate pipe assembly,

said assemblies being interconnected to provide a central gas conduit, a water inlet passage and a water outlet passage,

a nozzle including a bottom and associated side wall extending generally upwardly therefrom, said nozzle being connected to said pipe assemblies including a central gas chamber communicating with said gas conduit,

said central gas chamber being formed by an inner tubular wall portion converging downwardly in cup shaped configuration,

a by-pass chamber in said nozzle communicating with said water inlet passage and said water outlet passage,

said by-pass chamber being formed by a second intermediate tubular wall portion connected to the intermediate pipe assembly and extending generally parallel to said inner tubular wall portion,

said by-pass chamber including said side wall, said side-wall extending generally parallel to said first and second tubular wall portions, and

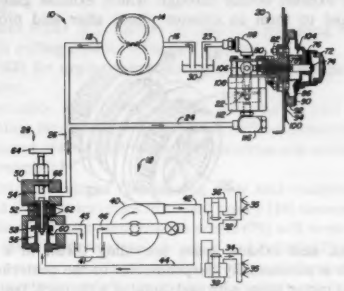
a plurality of circumferentially spaced gas ports in said nozzle communicating with said central gas chamber and extending through said side wall to direct a gas substantially outwardly against said inner wall of said nose section.

4,322,034

HYDRAULIC RATE CONTROL SYSTEM FOR SPRAYERS

Robert E. Fox, Minburn, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 16, 1980, Ser. No. 140,717
Int. Cl.[3] A01C 23/04; A01G 25/09
U.S. Cl. 239—155 3 Claims



1. A spray rate control system for a mobile sprayer with a spray nozzle member having one of a plurality of tip sizes and one of a plurality spray widths for applying a liquid to a medium at a rate dependent on the size and width, comprising:

a first source of hydraulic pressure having a fluid pressure outout which varies in accordance with the ground speed of the sprayer,

a second source of hydraulic pressure including an inlet for receiving liquid, an outlet for supplying the liquid under pressure to the nozzle member, and a flow line connecting the outlet with the spray nozzle member,

means responsive to the fluid pressure output for varying the pressure in the flow line in proportion to the variations in the fluid pressure output to maintain a preselected application rate, and

operator control means for adjusting the preselected application rate comprising, variable position valve means connected to the first source for varying the fluid pressure output in direct relation to the valve position, a computing device including an adjustable spray rate indicator operably associated with the valve means, said computing device having a plurality of input means, including a tip size input and a spray width input for entering an indication of said tip size and spray width of said nozzle on the computing device and adjusting said rate indicator in accordance with tip size and spray width.

4,322,035

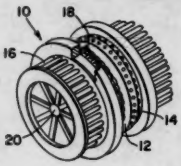
INERT GAS GENERANTS FOR UTILIZATION WITH ROCKET MOTORS

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 2, 1973, Ser. No. 400,076
Int. Cl.[3] B63H 11/00
U.S. Cl. 239—265.11 5 Claims

1. An inert gas generator for use in exoatmospheric environments where an on-board sensor is employed aboard a vehicle; said inert gas generator comprising a T-tube rocket motor fitted with a donut of a chemical that decomposes when heated to yield gaseous products which are optically inactive in a detector's infrared spectral bandpass region; said T-tube rocket motor comprised of a pair of rocket motor tubes filled with propellant and with at least one of said tubes provided with means for igniting said propellant, said tubes being sealed on one end and being adapted on the other end for fitting to an exhaust nozzle ring, said donut of a chemical fitted around at

least one of said tubes and said tubes diametrically fitted to said exhaust nozzle ring with said donut of a chemical being position adjacent said exhaust nozzle ring, said exhaust nozzle ring containing an exhaust port on the periphery thereof, said exhaust port being interconnected with a first channel that is substantially perpendicular to a second channel which serves to connect each of said rocket motor tubes to said exhaust port to form a T-configured rocket motor, said exhaust port serving as an exhaust nozzle through which exhaust gases are discharged to form an exhaust plume after said propellant is



ignited, said exhaust gases providing thrust in a direction which is substantially perpendicular to the centerline of said rocket motor tubes with said donut of a chemical being decomposed as said exhaust gases are discharged through said rocket motor tubes, said decomposed donut of a chemical yielding said optically inactive gases in the form of a protective boundary layer which is substantially perpendicular to the centerline of said rocket motor tubes, said protective boundary layer of gases serving as a mechanism for shaping said exhaust plume to prevent adverse interactions between said exhaust plume and the on-board sensor.

4,322,036

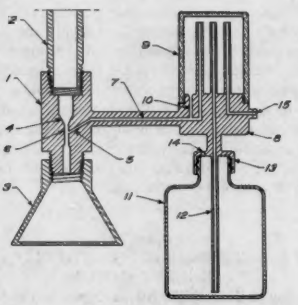
DEVICE FOR DISPENSING AND DISPERSING LIQUID ADDITIVES IN SHOWER BATH WATER

Herbert A. Bly, 10 Shadowstone La., Lawrenceville, N.J. 08648

Filed Feb. 13, 1980, Ser. No. 120,979

Int. Cl.³ B05B *7/30*

U.S. Cl. 239—311 **5 Claims**



1. A device for dispensing, aerating and dispersing liquid additives in a shower bath water system of the type including a water supply pipe and a bath shower head, said device comprising:

a coupling located between said water supply pipe and said bath shower head, said coupling including a venturi restriction therein through which water from said water supply pipe passes, said coupling further including an aspirating duct connected to said venturi restriction;

a premeasuring chamber means for premeasuring a determinable volume of liquid additive for dispensing, said premeasuring chamber means including an upper portion and a lower portion connected by a first duct and a second duct respectively to said aspirating duct;

a vented container for holding said liquid additive;

a tube extending from the inside of said container to the upper portion of said premeasuring chamber means; and,

drawing means for selectively drawing a determinable volume of liquid additive from said container through said tube into said premeasuring chamber means,

whereby manipulation of said drawing means draws liquid additive from said container through said tube into said premeasuring chamber means in an amount that may be controlled by said drawing means and measured in said premeasuring chamber means.

4,322,037

AEROSOL CAN, HAVING A SUPER-FINE ATOMIZATION VALVE, WITH A FILLING WHICH CONTAINS A PROPELLANT, PROCESS FOR ITS MANUFACTURE, AND ITS USE

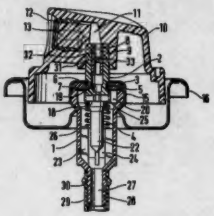
Dieter Heeb; Günter Bechmann; Uwe Bergemann; Volker Böllert, and Claus-Dieter Frenzel, all of Hamburg, Fed. Rep. of Germany, assignors to Hans Schwarzkopf GmbH, Hamburg, Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 93,950

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2849599

Int. Cl.³ B05B *1/34*; B65D *83/14*

U.S. Cl. 239—337 **8 Claims**



1. A self closing super-fine atomizing spray valve for an aerosol can to discharge a homogeneous solution acting as a propellant filling comprising

a valve housing mounted in said can and providing communication between the interior and exterior of said can,

a valve stem axially movable within said housing between valve open and valve closed positions,

a compression spring in said housing and bearing against a portion of said housing for urging said valve stem towards said valve closing position,

said valve stem having an annular groove defining upper and lower shoulders and an axial outlet channel communicating to the interior of said can by means of a radial outlet opening at said groove,

an elastic annular grommet having an external edge clamped between said valve housing and a dome on said can and an internal cylindrical edge engaging and radially biasing said annular groove of said valve stem to seal said radial outlet when said valve is in its closed position,

said internal cylindrical edge of said grommet having upper and lower zones tightly engaging said upper and lower shoulders of said valve stem respectively through radial and axial forces, which are at a maximum at said zones, under the influence of said spring when said valve is in its closed position,

a restrictor compression-mounted in said axial outlet channel of said valve stem having an axial cylindrical restricting channel, a bridge member in said restricting channel and an orifice in said bridge member,

a turbulent spray head having a receiving opening for firmly but releasably mounting on said valve stem, an approximately eccentrically arranged tapering chamber communicating with said receiving opening, and a substantially

cylindrical plug provided with two surfaces substantially parallel to said valve stem and an end surface, and

a turbulence jet forced on said plug having a jet orifice, four raised webs on an inner surface of said turbulence jet contacting said end surface of said plug, said four webs being arranged to form an approximately cylindrical turbulence chamber and inlet channels tangential to said jet orifice, and a cylindrical recess located on an outer surface of said turbulence jet concentric with said jet orifice.

4,322,038

ELECTROSTATIC PAINT SPRAY PISTOL WITH A ROTATING BELL SHAPED ATOMIZER

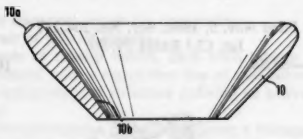
Manfred Luderer, Leutenbach, Fed. Rep. of Germany, assignor to Ernst Mueller GmbH & Co., Winnenden-Hoefen, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 102,862

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1978, 2854326

Int. Cl.³ B05B *5/00*

U.S. Cl. 239—700 **3 Claims**



1. An electrostatic paint pistol comprising in combination, a rotatable atomizer bell for dispensing paint from a thin film on its inner surface by centrifuging from the rim of the bell, a rounded bell rim providing a surface from which paint is centrifuged at different positions for different paint throughput rates having a generally circular arch shape in cross section with a diameter greater than one mm and rounded electrode surface means for establishing an effective electrical field position on the rotatable rounded bell rim which does not coincide with the position from which the paint is centrifuged at said different throughput rates.

4,322,039

PROFILE ACTUATED CABLE WRAPPING APPARATUS

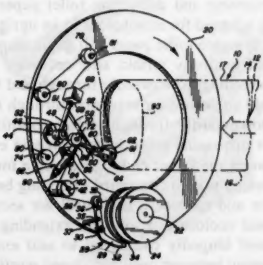
Samuel B. Stevens, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00768, § 371 Date Jun. 16, 1980, § 102(e) Date Jun. 16, 1980, PCT Pub. No. WO81/03652, PCT Pub. Date Dec. 24, 1981

PCT Filed Jun. 16, 1980, Ser. No. 245,243

Int. Cl.³ B65H *81/02, 59/32*

U.S. Cl. 242—4 BE **10 Claims**



1. In an apparatus for winding flexible elongated material (26) on a member (10) having a non-cylindrical cross-sectional shape which causes variations in the demand for elongate material being applied thereto, the apparatus including a shuttle (20), a supply (24) of elongate material (26) carried by the shuttle (20) and having tensioning means (28) for applying tension to the elongate material as said material is drawn from said supply (24), and pulley means (40,74,76,78) carried by said shuttle (20) for guiding said material from said spool (24) to said member (10), the improvement comprising:

compensating means (44) pivotally mounted on said shuttle (20) and being operable independent of said tensioning means,

a follower roller (62) carried by said compensating means (44) in rolling contact with said member,

means (68) for urging said follower roller (62) against said member,

a compensator wheel (70) pivotally mounted on said compensating means (44) for movement with said compensating means (44) as said roller (62) traverses the surface of said member;

said elongate material (26) passing over said compensator wheel (70) as it traverses from said supply (24) toward said member (10), said compensator wheel (70) will store elongate material during periods when said roller (62) passes over areas on the member of low material demand and will pay out stored elongate material during periods when said roller (62) passes over areas on the member of high material demand.

4,322,040

MANUAL STARTING DEVICE FOR WINDING YARN ONTO A BOBBIN

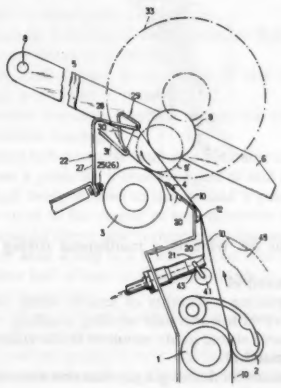
Jean-Marie Gadeix, Mulhouse, and Francois Wolf, Illfurth, both of France, assignors to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse, France

Filed Jan. 14, 1980, Ser. No. 111,596

Claims priority, application France, Jan. 12, 1979, 79 00718; Jul. 10, 1979, 79 17816

Int. Cl.³ B65H *54/02*

U.S. Cl. 242—18 PW **11 Claims**



1. A manual starting device for winding a yarn onto a bobbin while at the same time forming a yarn reserve in a textile machine equipped with a yarn-winding system provided with a horizontal delivery roller, a press roller applied against said delivery roller, a yarn-winding roller disposed above said delivery roller, a yarn guide driven in reciprocating motion along a portion of the winding roller, two parallel winding arms mounted for pivotal motion between a lower position and an upper position about an axis parallel to the axis of the delivery roller and of elastically clamping a yarn-winding tube between the ends of said arms, said winding tube being provided with a rough surface and capable of rotating while resting on the winding roller for the formation of a bobbin,

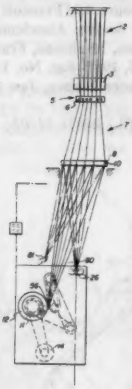
wherein said manual starting device comprises a suction nozzle for aspirating the end of the yarn which has been cut at the beginning of a bobbin-changing operation, said nozzle being placed upstream of the winding roller at a lower level than the winding roller and in a lateral vertical geometrical plane which is perpendicular to the axis of said winding roller and located very close to one end of said winding roller externally thereof, and a supported stationary hook located directly above the level of the winding roller immediately behind the winding tube carried by the winding arms in said lower position and also in the lateral vertical geometrical plane aforesaid, said hook being adapted to provide at least one loop for temporarily receiving that portion of the yarn which is located between the delivery roller and the suction nozzle, said at least one loop being located in the immediate vicinity and to the rear of the winding tube when said tube rests on the winding roller and above the axis of said tube when said winding arms are in said lower position.

4,322,041

METHOD OF AND APPARATUS FOR WINDING ROVING PACKAGES

Marius C. Schuller, Guelph, and Leslie J. Harris, Waterloo, both of Canada, assignors to Fiberglas Canada Inc., Toronto, Canada

Filed Jan. 22, 1980, Ser. No. 114,394
Claims priority, application Canada, Sep. 26, 1979, 366379
Int. Cl.³ B65H *54/00, 54/28, 57/28*
U.S. Cl. 242—42 **31 Claims**



1. Apparatus for winding a multistrand roving package, comprising:

a winding mandrel;

means for guiding a plurality of strands along convergent paths of travel towards said winding mandrel;

a pair of spaced strand guide members in the vicinity of said winding mandrel;

said guide members defining a gap therebetween for receiving said strands;

means for rotating said winding mandrel about the longitudinal axis thereof to wind said strands into a package thereon;

means for reciprocating said strand guide members parallel to said winding mandrel axis so that said strand guide members alternately engage said strands and thereby deflect said strands in such a way as to result in the strands having a side-by-side relationship in said package after the deposition;

said strand guide members each having a plurality of guide edge portions for contacting respective ones of said strands; and

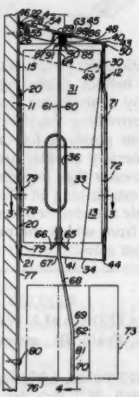
said guide edge portions being so located that, transversely of said winding mandrel axis, said guide edge portions are offset towards said winding mandrel from a linearly disposed relationship to intersect said strand paths at different respective angles corresponding to the differences in direction of said strand paths, thereby to compensate for differences in said deflections of said strands by said guide members resulting from the differences in direction of said strand paths and improve said deposition of said strands into said package.

4,322,042

TOILET PAPER CONTAINER AND DISPENSER

Thaddaues H. Wormly, 1218-20 Liberty St., Camden, N.J. 08104

Filed Nov. 5, 1980, Ser. No. 204,217
Int. Cl.³ B65H *19/00*
U.S. Cl. 242—55.54 **10 Claims**

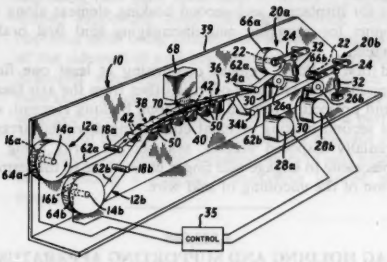


1. A toilet paper storage dispenser comprising an open ended upright enclosure having elongate front, back and side walls; the upper and lower ends of said enclosure being open for respectively receiving and delivering toilet paper rolls; said back wall being adapted for attachment to an upright supporting surface, an elongate toilet paper roll guide disposed longitudinally of and centrally within said enclosure having its lower region extending downwardly through and beyond the lower end of said enclosure for extension through toilet paper rolls passing downwardly through storage positions in said enclosure and a dispensing position beneath said enclosure; a lateral extension on the lower end of said guide for extending toward a supporting wall; a connector extending between said lateral extension and enclosure back wall for securement of said guide to said enclosure; a top wall extending across the upper end of and hingedly connected to said enclosure for swinging movement between open and closed positions respectively affording and denying access to the upper enclosure end; and releasable interfitting means on said top wall and the upper region of said roll guide movable into and out of interfitting engagement upon closing and opening of said top wall, to effect restraint against movement of said roll guide.

4,322,043
WEB TRANSPORT APPARATUS

Everett C. Grollimund, Midlothian, Va., assignor to Philip Morris, Incorporated, New York, N.Y.

Filed Jun. 18, 1980, Ser. No. 160,551
Int. Cl.³ B65H *17/08, 35/04*
U.S. Cl. 242—67.3 R 21 Claims

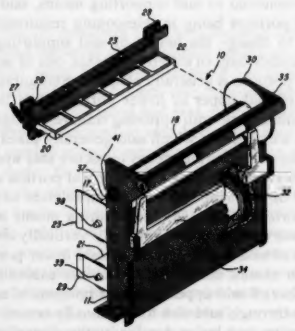


1. Web transport apparatus comprising:
(a) a pair of payout stands;
(b) a pair of takeup stands, each such takeup stand being associated with a respective one of said payout stands;
(c) an active support structure defining an active web travel path;
(d) a storage support structure defining a storage path parallel to but laterally displaced from said active path, said support structures being arranged so that a web extending from either one of said payout stands to its associated takeup stand may be supported in said active path by said active support structure and may be fed from such payout stand to such takeup stand, while a web extending from the other one of said payout stands to its associated takeup stand is supported on said storage support structure in said storage path; and
(e) selectively operable web shift means for laterally transferring a web from said storage support structure to said active support structure to shift it from said storage path to said active path.

4,322,044
PAPER ALIGNMENT AND LOADING APPARATUS

F. Thomas Bilek, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 23, 1980, Ser. No. 161,844
Int. Cl.³ B65H *23/06, 17/02*
U.S. Cl. 242—75.4 18 Claims

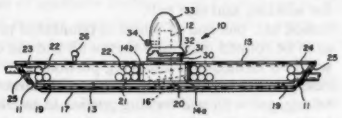


1. Continuous web-moving apparatus selectively activated by drive means, comprising:
(a) a frame having a fixed wall formed at one side thereof;
(b) supply roll means on which the web is wound, rotatably mounted in the frame, one end thereof being rotatably positioned against the fixed wall;
(c) drive roll means over which the web passes, rotatably mounted on the frame, one end thereof being rotatably positioned against the fixed wall, and being mechanically connected to be rotated by the drive means;
(d) pressure means positioned on the frame to force the web against the drive roll means to move the web when the drive means is activated; and
(e) drag means, positioned on the frame adjacent to the supply roll means to frictionally engage the web causing web tension between the supply roll means and the drive roll means thereby stiffening the web therebetween.

4,322,045
CORD OR HOSE CADDY

Roger J. Tellier, 982 Danby Dr., Webster, N.Y. 14580

Filed Aug. 13, 1980, Ser. No. 177,829
Int. Cl.³ B65H *75/38*
U.S. Cl. 242—86.1 10 Claims

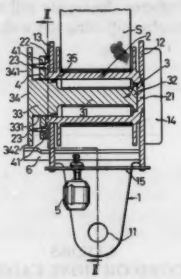


1. A cord or hose caddy comprising:
a. a generally dish-shaped resin container formed for skidding over floors or ground;
b. a shaft fixed upright at the center of said container and serving as a center of rotation;
c. an annular turntable rotatable within said container on a low friction bearing;
d. a central hub rotatable with said turntable and shaped to form an S guide for a central region of said cord or hose;
e. said hub being formed to incline said S guide between a lower level in the region of said turntable and an upper level spaced above said turntable so that one-half of said cord or hose winds in a lower coil on said turntable and the other half of said cord or hose winds in an upper coil on said lower coil;
f. a resin cover formed to overlie said container and rotate with said turntable;
g. said cover being spaced over said turntable to confine said upper and lower coils of said cord or hose on said turntable;
h. said container having diametrically opposed guide openings arranged at said upper and lower levels for guiding said cord or hose into said upper and lower coils;
i. a friction drag between said shaft and said cover;
j. a cam movable around said shaft and turned by rotation of said cover for applying said friction drag against unwinding said cord or hose and releasing said friction drag to allow free winding of said cord or hose;
k. said friction drag having opposed friction surfaces producing an unwinding drag that slightly exceeds the frictional resistance of skidding said container over floors or ground; and
l. said cover having a winding knob.

4,322,046
SEAT BELT RETRACTOR

Katsuyuki Tanaka, Okazaki; Satosi Kuwakado, Aichi; Noboru Tsuge, Kariya, and Toshiaki Shimogawa, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Oct. 14, 1980, Ser. No. 196,567
Claims priority, application Japan, Oct. 16, 1979, 54-142891[U]
Int. Cl.[3] A62B *35/02*
U.S. Cl. 242—107.4 A 6 Claims

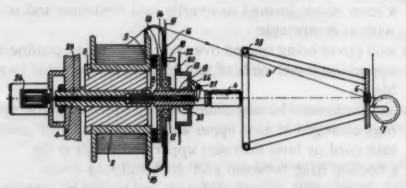


1. A seat belt retractor for vehicles comprising:
a retractor frame fixed to a vehicle body;
a reel which is rotatably supported by said retractor frame for winding said seat belt;
a torsion bar, one end of which is connected to said reel so as to be rotated integrally therewith and the other end of which is formed into a locking portion;
a lock member which is disposed in said retractor frame to be engaged with said locking portion in an emergency for locking said the other end of said torsion bar; and
a stopper means which is disposed between said reel and said the other end of said torsion bar for engaging said reel with said the other end of said torsion bar to prevent said reel from rotating when the twisting angle of said torsion bar of which one end is rotated integrally with said reel and of which the other end is locked by said lock member, reaches a predetermined value in the emergency.

4,322,047
DEVICE FOR THE AXIAL UNCOILING OF WIRES

Marcel Bonnabaud, Petite rue de la Gare, Pouilly-sur-Charlieu (Loire), France

Filed May 6, 1980, Ser. No. 147,287
Claims priority, application France, May 9, 1979, 79 12507
Int. Cl.[3] B65H *49/00*
U.S. Cl. 242—128 6 Claims

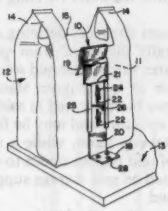


3. A device for the axial uncoiling of wire from a spool comprising:
a support for axially carrying said spool;
a wire drawing point axially juxtaposed with said spool;
a polished take-off ring rotatably mounted on said support adjacent said spool between said spool and said wire drawing point and engageable with said wire;
a first array of radially disposed bristles mounted on said take-off ring between said ring and said wire drawing point and engageable with said wire;
a first braking element formed on said take-off ring;
a second braking element slidably mounted on said support and spaced from said first braking element during the uncoiling of said wire for enabling the free rotation of said take-off ring; and
means for displacing said second braking element along said support for engaging and disengaging said first braking element,
said first braking element comprising at least one finger mounted on said take-off ring offset from the axis thereof and projecting toward said second braking element, and
said second braking element comprising a second array of radially disposed bristles, said second array being displaceable to engage said finger in response to the termination of the uncoiling of said wire.

4,322,048
BAG HOLDING AND SUPPORTING APPARATUS

Charles K. Vollman, Elgin, Ill., assignor to Co-Poly-Ex Corporation, Elgin, Ill.

Filed Aug. 18, 1980, Ser. No. 179,070
Int. Cl.[3] A63B *55/04*
U.S. Cl. 248—97 2 Claims



1. Bag holding and supporting apparatus for holding and supporting a bag in an open and upright position while a bottom portion of said bag is resting upon a generally horizontally disposed surface, said bag holding and supporting apparatus comprising:
upright means in generally vertical orientation in relation to said generally horizontal surface, said upright means thereby defining an upper end and a lower end thereof, said upright means including a lower upright portion connected to said base means, and an upper upright portion connected to said supporting means, said lower and upper portions being in telescoping relationship to each other to change the height of said supporting means to accomodate bags of different heights, one of said upper or lower portions is generally planar in configuration and the other of said upper or lower portions if of larger transverse dimension with opposing transverse edges rolled to define a channel in which said generally planar portion is slidable, and securing means to secure said upper upright portion relative to said lower upright portion at a desired height of said supporting means in relation to said generally horizontal surface, said securing means including at least one elongated and generally vertically disposed slot in one of said upper portion or said lower porton of said upright means, and a thread fastener extending through the other of said upper or lower portions of said upright means through said slot to frictionally secure said upper portion to said lower portion at the desired telescoping position;
base means at a lower end of said upright means adapted for mounting of said bag holding and supporting apparatus in relation to said generally horizontal surface; and,
supporting means disposed at the upper end of said upright

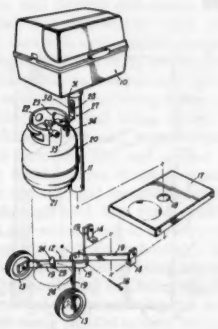
means adapted to resiliently receive and engage a part of a sidewall of said bag to aid in supporting said bag in an open and upright position, said supporting means further adapted to release said resilient engagement with said bag without manipulation or actuation of said supporting means, said supporting means including a continuous piece of metal rising upwardly from said upright means and being bent back upon itself to define a generally R-shaped supporting head defining opposing sides, said opposing sides being adapted to resiliently engage a part of the sidewall of said bag therebetween, said generally R-shaped supporting head having a leg which points outwardly away from said upright means to define an enlarged opening for receiving and guiding a part of the sidewall of said bag into said supporting head for engagement therewith and said opposing sides of said supporting head defining a generally transverse line of resilient contact.

4,322,049

BARBEQUE GRILL MOUNTING BRACKET

Mason P. Holland, Columbus, Ga.; Lester E. Taylor, Phenix City, and James W. Branch, Smiths, both of Ala., assignors to W. C. Bradley Co., Columbus, Ga.

Filed Mar. 17, 1977, Ser. No. 778,485
Int. Cl.[3] A47J 37/07
U.S. Cl. 248—154 4 Claims



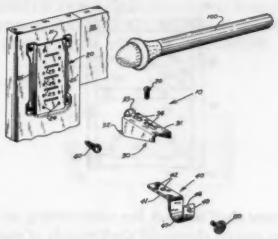
1. A device for mounting a fuel tank securely and removably on a gas-fired barbecue grill, said grill having an upright support member rising from a substantially horizontal base, said fuel tank having top and bottom vertical axis rings, said device comprising a pair of spaced fuel tank support and positioning bracket elements secured to said horizontal base and spaced from said upright support member and including step portions engaging under the lower edge of the bottom tank ring and supporting the weight of the tank and upstanding portions projecting inside of the bottom tank ring to position the tank horizontally relative to the upright support member, and an upper tank positioning and stabilizing bracket assembly including a first substantially L-shaped bracket part secured to the side wall of the upright support member and projecting laterally therefrom and a second substantially inverted U-shaped bracket part secured to the first bracket part and engaging the top tank ring, means connecting said first and second bracket parts for adjustment laterally relative to the upright support member, and means connecting the first bracket part with the upright support member for vertical adjustment thereon.

4,322,050

ADJUSTABLE BRACKET FOR A DECORATOR ROD

Stanley G. Roach, 3819 Southwest 14th St., Des Moines, Iowa 50309

Filed Jan. 21, 1980, Ser. No. 114,069
Int. Cl.[3] A47B 96/06; A47G 55/00
U.S. Cl. 248—222.2 4 Claims



1. An adjustable decorator rod support device comprising:

a mounting bracket including a first horizontally disposed slot therein, said mounting bracket having side portions having means thereon for attachment to a wall and a raised central portion forming a channel;

a second horizontally disposed slot in said raised central portion of said mounting bracket, said second slot being located above the first slot;

a first pair of apertures disposed in said raised central portion of said bracket, said first pair of apertures being located generally between and adjacent to each operative end of said first and second horizontally disposed slots;

a third horizontally disposed slot in said raised central portion of said mounting bracket located below the first slot;

a second pair of apertures disposed in said raised central portion of said bracket, said second pair of apertures being located generally between and adjacent to each operative end of said first and third horizontally disposed slots;

an elongated support arm;

means for connection to a decorator rod on one end of said elongated support arm, said elongated support arm comprising a flat central portion and a pair of downwardly depending side portions attached to said flat central portion; and

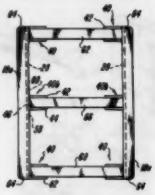
engaging means including a first portion and a second portion on the other end of said support arm for engaging one of said horizonally disposed slots and one pair of said apertures by inserting the second portion into one of said slots, and then rotating said elongated support arm downwardly 90 degrees about an axis disposed at the point of connection between the first and second portions, whereby said elongated support arm is vertically adjustable with respect to said mounting bracket, said engaging means comprising a first portion extending from and lying in the same plane as said flat central portion of said elongated support arm and a second portion connected to and disposed at a right angle with respect to said first portion, said second portion having a width no wider than the width of said first portion and the width of said first and second portions being less than the width of said first, second and third slots, said first, second and third slots being of substantially the same shape as the cross-sectional shape of said first portion, and tab means attached to and extending from each of said downwardly depending side portions for snug reception in one of said pair of apertures for preventing said elongated support arm from pivoting downwardly or from side-to-side when said first portion of said engaging means is disposed in one of said slots and said tab means are disposed in one of said pair of apertures.

4,322,051

SHELF BRACKET ASSEMBLY

John S. Shepard, 1304 S. Shields St., Ft. Collins, Colo. 80521

Division of Ser. No. 72,351, Sep. 4, 1979, Pat. No. 4,231,300.
This application Jul. 28, 1980, Ser. No. 172,827
Int. Cl.³ A47B 47/00
U.S. Cl. 248—235 1 Claim



1. A one-piece shelf bracket, for constructing an assembly of shelving from spaced elongated shelf boards of standard thickness, comprising:

a generally U-shaped clip having a pair of plates joined by a flat bight with said plates being parallel-spaced apart a distance substantially equal to said standard thickness for snug engagement with the marginal edge portion of a shelf board;

means defining an aperture through one of said plates and receptive of a fastener for securing said one plate against the marginal edge portion of a shelf board engaged by said one clip to prevent horizontal displacement of said shelf board;

means defining a pair of laterally-spaced apertures extending through said bight and receptive of a fastener for securing said clip into a fixed location;

a first stub integrally projecting outwardly from the exterior of one of said plates and in alignment with said bight;

a second stub integrally projecting outwardly from the exterior of the other of said plates and in alignment with said bight;

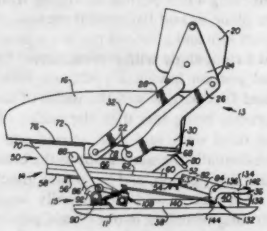
and means, defined at each entrance for the respective one of said fasteners into corresponding ones of said apertures, for enabling said fasteners effectively to seat flush and unobtrusively within said openings and thereby enable said bight to seat flush against said marginal edge of said shelf board.

4,322,052

LATCH ASSEMBLY-REVERSIBLE SEAT

Norman J. Hodge, Peoria, and John S. Logsdon, Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00181, § 371 Date Feb. 22, 1980, § 102(e) Date Feb. 22, 1980
PCT Filed Feb. 22, 1980, Ser. No. 173,201
Int. Cl.³ B60N 1/02, 1/08
U.S. Cl. 248—420 9 Claims



1. In a latch assembly of an adjustable carriage (14) for changing the position of an operator's seat assembly (10) of a vehicle (11) between first and second positions (12,13) relative to said vehicle (11), the improvement comprising:

a cam (92) operatively connected to said carriage (14) and movable between first and second preselected positions (94,96), respectively, in response to movement of said seat assembly (10) to a corresponding one of said first and second positions (12,13);

an arm assembly (108) having first and second ends (114,120), and an overall length between said ends 114,120, said first end (114) being pivotally connected to said carriage (14) and said second end having a pin (118) in releasable locking engagement with said cam (92) and cooperating with said cam (92) to lock the seat assembly (10) in said first and second positions (12,13);

means (126) for biasing said pin (118) in a preselected direction into said releasable locking engagement with said cam (92); and

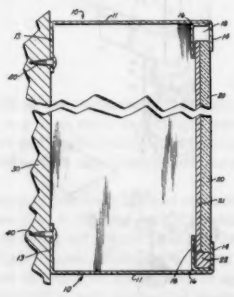
means (110,112,116) for adjusting the overall length of said arm assembly 108.

4,322,053

FITTING ROOM MIRROR BRACKET

Charles F. Logie, Spring Lake, Mich., assignor to American Store Equipment Company, Muskegon, Mich.

Filed Jun. 3, 1980, Ser. No. 155,964
Int. Cl.³ A47F 7/14
U.S. Cl. 248—488 26 Claims



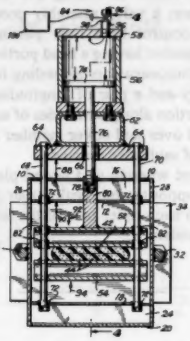
1. A fitting room mirror assembly for installation in a fitting room having a first wall and a second wall adjacent to said first wall, including two mirror brackets, one of which is located above the other and each of which is attached to both said first wall and said second wall, for supporting a mirror between said mirror brackets, the improvement in said assembly comprising:

each of said mirror brackets comprising a generally flat nonapertured plate made of a material of sufficient strength and rigidity to support a mirror, said plate being generally triangular in shape defined by a first edge, a second edge, and a third edge;

securing means for securing said first edge and said second edge of said plate to said first wall and said second wall of a fitting room respectively;

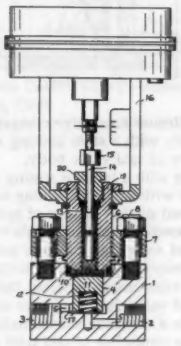
and receiving means on said third edge of said plate for receiving and supporting an edge of said mirror, said third edge of said plate being substantially the same length as said edge of said mirror to be supported thereby.

4,322,054
PINCH VALVE
James A. Campbell, Monroeville, Pa., assignor to Red Valve Company, Inc., Carnegie, Pa.
Filed Dec. 29, 1980, Ser. No. 220,464
Int. Cl.³ F16K 7/07
U.S. Cl. 251—5 2 Claims



1. A double acting pinch valve with floating pinch mechanism which comprises a frame, a flexible deformable resilient sleeve, said flexible deformable sleeve mounted on said frame, means to pass a fluid stream through said flexible deformable sleeve, a first rigid member on one side of said flexible deformable sleeve, a second rigid member on the other side of said flexible deformable sleeve opposite to said one side, said first and second rigid members being contiguous with said flexible deformable sleeve, said flexible deformable sleeve having an elongated axis, said first and second rigid members having parallel elongated axes with said parallel elongated axes of said first and second rigid members being perpendicular to the axis of said flexible resilient sleeve, a rectilinear rigid container, said container having an end, said end being spaced away from said flexible deformable sleeve and being closed, means rigidly connecting said container to said second rigid member, said connecting means including first and second elongated rods which are rigidly fixed relative to said container and rigidly connected to said second rigid member, said first and second rods extending through said first rigid member, means for allowing said first and second rods to move relative to said first rigid member, a piston, said piston having a head and a connecting rod, the head of said piston being mounted within said container with said connecting rod being rigidly connected to said first rigid member, said connecting rod and first and second elongated rods being parallel to each other, said means for allowing said first and second rods to move relative to said first rigid member further allowing said first rigid member to move relative to said second rigid member so that said first and second rigid members, container and piston are freely displaceable relative to said frame and toward or away from said sleeve and means to pass a fluid into said container between said closed end and said piston head so that said closed end and said piston head are both concomitantly displaceable away from each other, whereby both said container and said piston are concomitantly displaceable in opposite directions away from each other, so that both said first rigid member and said second rigid member are concomitantly displaceable toward each other in a convergence which pinches said sleeve and curtails or terminates the flow of fluid through said sleeve, said sleeve being pinched on both said one side and said other side opposite to said one side, by both said first rigid member and said second rigid member, said means for allowing said first and second rods to move relative to said first rigid member including upper and lower pairs of guide means mounted in said frame, said upper guide means mounted above said first rigid member and said lower guide means mounted below said second rigid member, said first and second rods each being received in one upper guide means and one lower guide means and floating relative thereto.

4,322,055
MINUTE FLOW REGULATING VALVE
Hans D. Baumann, P.O. Box 471, Rye, N.H. 03870
Filed Jan. 30, 1981, Ser. No. 230,343
Int. Cl.³ F16K 31/122
U.S. Cl. 251—57 6 Claims



1. Apparatus for controllably restricting the flow of fluid there through which comprises:

a. a housing having inlet and outlet ports, a longitudinal bore and at least one additional port opening being co-axial and connecting externally with said longitudinal bore;

b. closure member suitably fastened to the additional port opening of said longitudinal bore of the housing to effectively cover the latter, and having a central opening extending co-axial with said longitudinal housing bore and through the length of said closure member;

c. means for creating a frictional flow path located within said longitudinal housing bore and having opposed parallel and engaging surfaces and having outer peripheries spaced interior of said longitudinal bore, one of said means being slidingly engaged within said bore;

d. deformable element or elements interspaced between said means for creating a frictional flow path;

e. a central bore penetrating at least one of the engaging surfaces of said means for creating a frictional flow path to provide fluid access to either the inlet or the outlet port of said housing;

f. means for conducting fluid from either the inlet port or the outlet port to the outer periphery of said engaging surfaces;

g. hydraulic means to effectively position said slidingly engaged means for creating a frictional flow path within said longitudinal bore;

h. flexible diaphragm means interspaced between said hydraulic means and said slidingly engaged means for creating a frictional flow path and said diaphragm means and said slidingly engaged means are retained in said longitudinal bore by said closure member;

i. hydraulic means comprising hydraulic fluid retained within said central opening of said closure member and in contact with said flexible diaphragm;

j. means engaged within said central opening to compress and displace the hydraulic fluid, and;

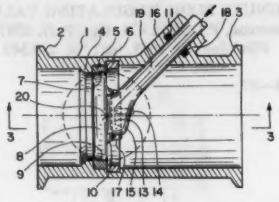
k. actuating means of conventional art mounted externally of said closure member, disposed to position said means to compress and displace the hydraulic fluid.

4,322,056

POSITIVE CLOSURE DISC VALVE

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005, and Ronald R. Chapman, 9425 N. Calle el Milagro, Tucson, Ariz. 85704

Filed Feb. 20, 1981, Ser. No. 236,206
Int. Cl.³ F16K 1/22
U.S. Cl. 251—88 2 Claims



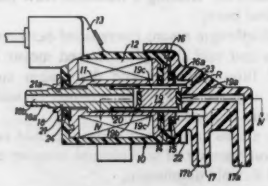
2. A positive closure disc valve comprising in combination:
(a) a valve body with a stem-housing disposed in a slanted angle relative to said valve body;
(b) a valve seat with a tapered seating surface;
(c) a valve disc with a tapered seating surface corresponding to said tapered seating surface of said valve seat;
(d) a stem disposed in a slanted angle to said valve disc and engaging and extending through said stem-housing, the lower extremity of said stem connected to said valve disc in a sliding relationship wherein the only movement allowed to said valve disc relative to said stem is the sliding movement in a direction substantially parallel to a plane including the center line of said stem as well as the central axis of said valve body in the direction substantially perpendicular to the central axis of said valve body, rotation of said stem in one direction moving said valve disc to an open position substantially parallel to said valve body central axis and rotation of said stem in another opposite direction moving said disc to a closed position substantially perpendicular to said valve body central axis; and
(e) a means for rotating said stem including means for slightly pulling out and slightly pushing in said stem whereby said stem at the slightly pushed in position presses said valve disc to said valve seat providing the positive closure, while said stem in slightly pulled out position removes the pressure contact between said valve disc and said valve seat for easy opening and closing of said valve disc.

4,322,057

ELECTROMAGNETICALLY OPERATED VALVE UNIT

Minoru Yamanaka; Hideo Haneda, both of Toyota; Masatoshi Katoh, Kariya, and Mitsuyuki Suzuki, Gamagohri, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 11, 1980, Ser. No. 139,396
Claims priority, application Japan, Apr. 13, 1979, 54-45765
Int. Cl.³ F16K 31/06
U.S. Cl. 251—129 2 Claims



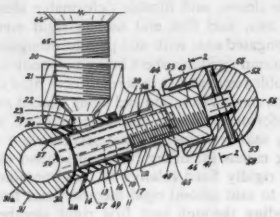
1. In an electromagnetically operated valve unit comprising: a main body of non-magnetic material having a closed end and an open end; a cover member of non-magnetic material sealingly fitted to the open end of said main body; a lateral plate member of magnetic material interposed between said main body and said cover member; a solenoid coil wound around a bobbin and contained within said main body; a statinary core of magnetic material concentrically fixed within said bobbin; a moving-core axially movable within an axial bore extending coaxially with said stationary core through said lateral plate member; resilient means for biasing said moving-core toward said cover member; a valve assembly cooperating with said moving-core to control fluid flow passing therethrough; a U-shaped yoke member having a head portion engaged with an extension of the stationary core extending from the closed end of said main body and a pair of longitudinal arms extending from the head portion along both sides of said main body; and a bracket coupled over said cover member and secured to the respective arms of said yoke member;
the improvement wherein said lateral plate member is provided at its opposite ends with a pair of arms which are engaged with each outer face of the longitudinal arms of said yoke member.

4,322,058

PIPE SIDE VALVE

Robert E. Thompson, Houston, and Richard P. McNinney, Richmond, both of Tex., assignors to Schmidt Manufacturing, Inc., Houston, Tex.

Filed Aug. 7, 1980, Ser. No. 176,058
Int. Cl.³ F16K 31/50
U.S. Cl. 251—145 24 Claims



1. Valve apparatus, comprising a valve body having a longitudinal valve passage therethrough and having a lateral flow passage communicating with said valve passage at a uniform cylindrical portion of said valve passage adjacent one end of said valve passage, said valve body having a curved formation at said one end of said valve passage through which said uniform cylindrical portion of said valve passage centrally extends, cap means having a threaded passage therethrough disposed to close the other end of said valve passage, a unitary valve plunger having an exteriorly threaded portion screwed through said threaded passage and having a cylindrical portion closely yet slidable disposed in said cylindrical portion of said valve passage, said cylindrical portion of said plunger being slidably movable longitudinally of said cylindrical portion of said valve passage between positions closing and opening said lateral flow passage by rotation of said valve plunger, a pipe nipple having an outward curvature matching said curved formation sealedly engaged at one side thereof against said curved formation and having a wall opening of the same diameter as said uniform cylindrical portion of said valve passage forming a continuation of said valve passage into the interior of said pipe nipple, said pipe nipple having a connection means at each end thereof for connection of conduit means to each end thereof, said lateral flow passage having connection means for connection thereof to conduit means.

4,322,059
SCARFING TORCH

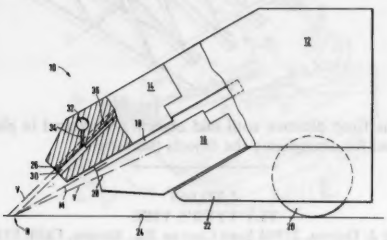
Dieter Kimm, Dreieich, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 29, 1981, Ser. No. 258,675

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018647

Int. Cl.³ B23K *7/08*

U.S. Cl. 266—75 **6 Claims**



1. In a scarfing torch for the thermochemical machining of metal workpiece surfaces including upper and lower preheating blocks which are arranged at a distance from each other to form a scarfing oxygen channel with a powder supply associated with the scarfing torch, the improvement being said powder supply includes at least one nozzle which is provided in one of said preheating blocks.

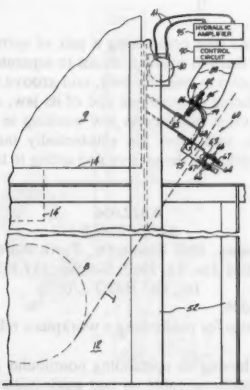
4,322,060
QUENCH TANK STEERING ROLL ASSEMBLY

Bennet W. Deblase, Orange; Harold W. Ryder, Hamden; Pasquale Silvestri, New Haven, and John M. Whalen, Ansonia, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 31, 1979, Ser. No. 44,181

Int. Cl.³ C21D *11/00*

U.S. Cl. 266—89 **33 Claims**



16. A steering mechanism and center guide assembly for automatically steering a moving strip material along a desired path of travel comprising:

roll means mounted to a first shaft;

pivotable yoke means for tilting said roll means, said pivotable yoke means being attached to said shaft;

means connected to said yoke for pivoting said yoke upon activation;

activating means connected to said pivoting means for causing tilting of said roll means upon receipt of an appropriate signal;

means on one side of and extending beyond both edges of said strip for continuously supplying a flow of air across said path of travel of said strip material;

means on the other side of said strip for collecting two separate portions of said flow of air, said separate portions each passing and being associated with one of said edges; and

means connected to said collecting means for sensing any pressure differential between said separate portions of said flow of air and for providing said signal in response to said pressure differential.

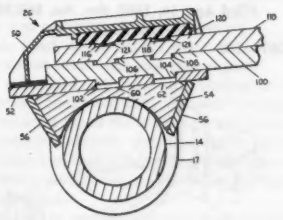
4,322,061
TANDEM SPRING SUSPENSION WITH LEAF ROTATION STOP

Lloyd D. Masser, Twin Lakes, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Feb. 14, 1980, Ser. No. 121,415

Int. Cl.³ F16F *1/26*

U.S. Cl. 267—54 R **5 Claims**



1. In a mounting for the ends of a leaf spring suspension for an axle comprising:

a housing including a bearing plate;

at least two leaf springs arranged in a vertically stacked relationship, said leaf springs having end portions received in said housing and seated on said bearing plate;

means for limiting relative displacement between each of said at least two leaf springs and between said bearing plate and a first leaf spring adjacent thereto;

the improvement which comprises:

said means for limiting relative displacement including first pin means disposed between said bearing plate and said first leaf spring and second pin means spaced from said first pin means and disposed between said at least two leaf springs;

said second pin means including two cups integrally formed in one leaf of said at least two leaf springs and received in corresponding recesses in an adjacent leaf of said at least two leaf springs;

said recess having an elongated configuration, thereby allowing sliding of said cups in said recesses along the length of said leaf during flexure of said leaves.

4,322,062
TORSION SPRING DAMPER

Benjamin J. Aleck, Jackson Heights, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,340

Int. Cl.³ B60T *11/10*

U.S. Cl. 267—154 **11 Claims**

1. A torsion damper system for a torsion load producing structure comprising:

a torsion bar having a greater length than width which undergoes elastic deformation when subjected to a torsional load;

a means for connecting a torsional load to the torsion bar;

a layer of damping material encircling the torsion bar and

bonded to said torsion bar such that a torsional load applied to the torsion bar loads the damping material in shear; and

an outer cylinder encircling the layer of damping material and bonded to said damping material to receive shear loads from

said layer of damping material, said outer cylinder having no separate attachment to any other structure when the torsion damper system is connected to said torsion load producing structure.

4,322,063

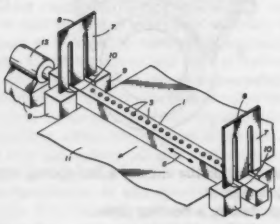
SUSPENSION FOR AN OSCILLATING BAR

Kenneth H. Fischbeck, Dallas, and Allen T. Wright, Lewisville, both of Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 14, 1980, Ser. No. 140,363

Int. Cl.³ F16F *1/26*

U.S. Cl. 267—160 **2 Claims**



1. An apparatus for axially oscillating a bar, which comprises:

a trifurcated flexure means having a central section and two outer sections;

a frame connected to said outer sections such that said central section will act as a multiple compound cantilever when oscillated;

a bar connected to only said central section of said trifurcated flexure means for oscillatory movement therewith; and

means for causing oscillation of said bar and said central section.

4,322,064

OBJECT-SPACING TOOL AND METHOD THEREOF

Michael Jarvis, Rte. #1, Box 135, Old Calvert City Rd., Calvert City, Ky. 42029

Filed Apr. 18, 1980, Ser. No. 141,579

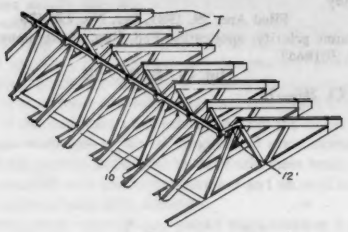
Int. Cl.³ B25B *1/20*

U.S. Cl. 269—43 **17 Claims**

1. A portable, rugged, object-spacing tool which is foldable for storage, expandable for use and disengageable for reuse, comprising:

a plurality of serially-disposed and pivtally-connected elements, each element having two members fixedly attached thereto and projecting therefrom, each member cooperating with a member projecting from an adjacent element for clamping an object therebetween, said cooperating members being spaced a predetermined distance from an adjacent pair of similarly-cooperating members,

thus constituting clamping means for clamping plural objects between cooperating members, for spacing objects a fixed distance from each other, for holding the objects at



the fixed distance until said objects are secured in place and for disengaging the objects thereafter.

4,322,065

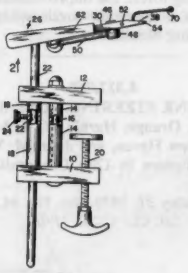
FLY TYER'S VISE

Gerald J. Doiron, 27544 Seco Canyon Rd., Saugus, Calif. 91350

Filed Aug. 11, 1980, Ser. No. 176,676

Int. Cl.³ B25B *1/00*

U.S. Cl. 269—254 R **1 Claim**



1. A fly tyer's vise comprising a pair of spring steel jaws, means to hold them in contact, means to separate the jaws, an arc-shaped groove in one jaw only, said groove having a concave portion facing the extreme end of its jaw, and

including a cross pin on one jaw working in a hole in the other jaw, said cross pin substantially intersecting the convex portion of the groove and acting to back the hook.

4,322,066

SAW FENCE

Fredrick G. Disney, 4201 Rowan Dr., Forth Worth, Tex. 76116

Filed Jan. 11, 1980, Ser. No. 111,353

Int. Cl.³ B23Q *3/00*

U.S. Cl. 269—304 **6 Claims**

1. An apparatus for positioning a workpiece relative to a tool comprising:

a guide rail having an upstanding nontubular leg,

a fence assembly movable on said guide rail and including:

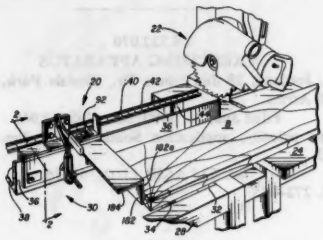
first and second upstanding parallel guide plates, said plates being longer in length than in height and said first guide plate having a cutout therethrough in line with at least a portion of said second guide plate,

a guide plate connector joining the upper ends of said guide plates to maintain said guide plates in a spaced, parallel relation and forming a channel between the confronting surfaces of said guide plates having a width less than the height of said guide plates, said distance from the guide plate connector to the ends of said guide

plates remote from said guide plate connector being less than the height of said guide rails,

bearing means mounted in said guide plate connector and extending therefrom for engagement with said guide rail to facilitate movement of said fence assembly on said guide rail,

bearing means mounted in said first guide plate, said bearing means for engaging the side of said guide rail to facilitate movement of the fence assembly relative to the guide rail,



a positioning fence mounted to and extending transversely from said first guide plates, and

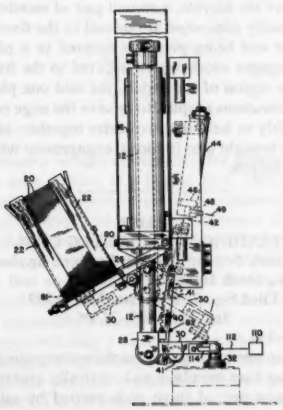
clamp means mounted to said fence assembly by attachment to said guide plate connector for movement with said fence assembly and having a linkage including an engaging leg for engagement of said guide rail through the cutout in said first guide plate to clamp said guide rail against said second guide plate.

4,322,067

ARTICLE TRANSFER APPARATUS

Paul H. Masselin, Richmond, and Karl H. Wieland, Mechanicsville, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 11, 1978, Ser. No. 968,363
Int. Cl.³ B65H *3/08*
U.S. Cl. 271—99 **9 Claims**



1. Apparatus for transferring articles such as cards and the like from a storage location to a point of use at a second location remote from the first, said apparatus comprising

an elongated actuator member supported for movement along a fixed vertical axis,

a magazine for holding a plurality of the articles in a superposed stack thereof, said magazine being disposed at one side of said fixed axis, the point of use being disposed at the other side of said fixed axis and a distance below the magazine,

means for reciprocating said actuator member along said fixed axis between first and second positions,

a carrier arm rotatably mounted at one end of said actuator member,

suction imposing means fixed to said carrier arm, and

means operative when said actuator member is moved from its first to second positions for vertically elevating and concurrently rotating said carrier arm in one direction away from a positioning thereof at said point of use to position same at the other side of said fixed axis adjacent said magazine and with the suction imposing means engaged against the lowermost article in said stack thereby to effect suction withdrawal and holding of said lowermost article from the stack when said suction imposing means is moved away from said magazine, said carrier arm operating means being operative when said actuator member is moved from its second to first positions for concurrently rotating said carrier arm in an opposite direction and vertically lowering same to return said carrier arm to said point of use position, the said lowermost article being delivered to the point of use upon return of said carrier arm to said point of use and release of the suction imposed on said article,

said carrier arm operating means comprising:

a pinion gear fixed to said carrier arm,

a rack in constant mesh with said pinion gear,

bias means associated with said rack tending to move said rack generally co-directionally with the movement of said actuator member when the latter is moved from its first to second positions whereby during an initial portion of the said movement of said actuator member there is concurrent generally co-directional movement of said actuator member and rack,

bias limiting means operative during the remainder movement of said actuator member between its said first and second positions for preventing rack movement during said actuator member remainder movement whereby said pinion gear and carrier arm are caused to rotate in said one direction,

said bias means in its bias stopped position being effective to prevent movement of said rack during an initial portion of the movement of said actuator member from its second to first position whereby said pinion gear and carrier arm are caused to rotate in said opposite direction, and

stop means for limiting the rotation of said carrier arm in said arm opposite direction during the remainder portion of the movement of said actuator member between its second and first positions whereby during such remainder portion said rack is caused to move in tandem with said actuator member in opposition to said bias means.

4,322,068

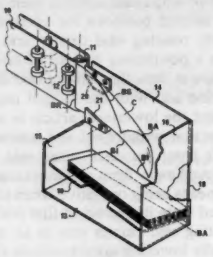
RECEIVING HOPPER FOR DOCUMENTS

Henri P. M. Cayn, les Ponts de Ce, and Claude J. Donabin, Angers, both of France, assignors to Compangie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme), Paris, France

Filed Apr. 29, 1977, Ser. No. 792,209
Claims priority, application France, Apr. 29, 1976, 76 12764
Int. Cl.³ B65H *31/02, 29/13*
U.S. Cl. 271—207 **16 Claims**

1. A hopper for receiving documents fed from an output of a feeding track in a vertical orientation and for stacking the documents in a flat arrangement one atop the other comprising the combination of: at least one vertical boundary plate aligned parallel to the plane of the feeding track and having a first edge in close proximity to the output thereof such that the documents are fed parallel to that plate, first guide means supported on said vertical plate for progressively spacing the upper part of a document fed into the hopper away from the vertical plate, and second guide means supported on said vertical plate,

said second guide means including a guiding passage on its upper face which is bounded by a lip and which is disposed at a level lower than that of the lower edge of a document fed into the hopper, said guiding passage extending on part of the breadth of the vertical back plate between a first end situated flush with said first edge of the vertical plate and a second end



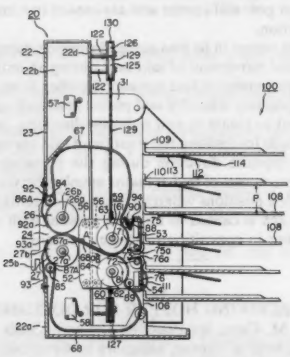
situated substantially perpendicularly above the rear edges of documents of mean length building up in the hopper, to enable the lower edge of a document entering the hopper to be guided and progressively moved closer to said vertical plate as that document is fed into the hopper, so as to cause that document as it is fed to tilt about its lower edge such that successive fed documents are stacked in flat arrangement.

4,322,069

SHEET SORTING APPARATUS

Charles S. Mitchell, Portola Valley, Calif., assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1979, Ser. No. 90,511
Int. Cl.³ B65H *39/11, 29/12*
U.S. Cl. 271—296 **16 Claims**



1. A sheet sorting apparatus in which sheets discharged from a pattern recording apparatus are received by sheet introducing means and, after having been transported through transporting means to discharge means provided on a movable platform arranged movably in a substantially vertical direction to a main body of the sorting apparatus, distributed sequentially to a plurality of bins having inlet openings arrayed along a vertical moving path of said discharge means, characterized in that:

said sheet introducing and discharge means are spaced relatively apart by a distance that varies between a minimum and a maximum-defined distance as the platform moves vertically along said vertical path thereof for distributing sheets to selected ones of said plural bins,

said transporting means is constituted by a pair of superposed endless belts spanning said introducing and discharge means for holding the sheet in a sandwiched manner therebetween, the length of said endless belts being sufficient to span said maximum distance between said discharge and introducing means, and

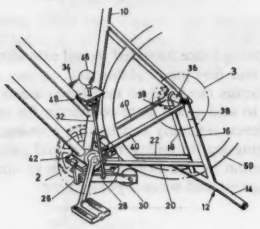
means on the sheet sorting apparatus for maintaining the superposed portions of the sandwiched belts between which sheets are transported in a tensioned state between said introducing and discharge means as said distance varies during vertical movement of the platform.

4,322,070

EXERCISING APPARATUS

Gert J. Jordaan, 15 Jan Smuts Dr., Florida Park, Transvaal, South Africa

Filed Jun. 25, 1980, Ser. No. 162,942
Claims priority, application South Africa, Jun. 25, 1979, 79/3163
Int. Cl.³ A63B *23/04, 69/16*
U.S. Cl. 272—73 **3 Claims**



1. Exercising apparatus comprising a bicycle stably supported on a stand on a surface so that the rear wheel of the bicycle is free of the surface, the stand comprising a surface-engaging base, a first pair of members, one end of which is fixed to the base to form a fixed structure and the other end of which detachably engages with a pair of formations secured to the rear axle of the bicycle, a second pair of members each of which is pivotally connected at one end to the fixed structure and the other end being pivotally secured to a plate which detachably engages another plate secured to the frame of the bicycle in the region of the pedals, the said one plate having upstanding formations adapted to receive the edge of the other plate detachably to hold the two plates together, and a roller adapted to be brought into frictional engagement with the rear wheel of the bicycle.

4,322,071

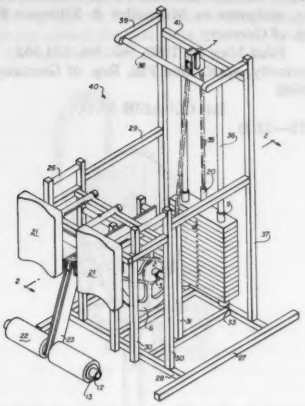
STANDING VERTICAL LEG CURL

Lloyd J. Lambert, Jr., and Lloyd J. Lambert, Sr., both of 1538 College Ave., South Houston, Tex. 77587

Filed Sep. 7, 1979, Ser. No. 73,509
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—118 **7 Claims**

1. A standing vertical leg curl machine comprising: a framework including base members and vertically upstanding support members, a pair of thigh pads carried by said vertical members, a horizontal exercising support carried by said vertical members disposed between said pair of thigh pads, a downwardly and outwardly extending exercise arm pivoted at one end to said horizontal support and having a sprocket a said one end, weight means connect to said sprocket, for movement between a rest position and an elevated position during the rotating of said sprocket and a pair of leg pads transversely disposed on said exercise arm at an extremity remote from said exercise arm one end and laterally spaced from said thigh pads

whereby a standing person placing his legs between said thigh pads and said leg pads exercises by moving said exercise arm



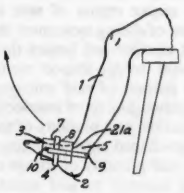
pivotally upwardly with the legs with concomitant rotation of said sprocket against said weight means.

4,322,072

EXERCISE WEIGHT UNIT FOR ATTACHMENT TO THE FOOT

Gerald A. White, 1427 Morrison St., Madison, Wis. 53703

Filed Mar. 14, 1980, Ser. No. 130,439
Int. Cl.³ A63B *23/04*
U.S. Cl. 272—119 **6 Claims**



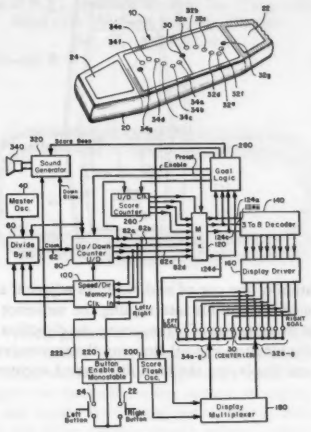
1. A variable weight exercise unit for releasable attachment over the arch portion of a human foot, comprising an elongated pocketed support means of a substantially rectangular shape and of length to provide convenient wrapping of the support means over the arch portion of a foot, said support means having a series of individual open-ended weight pockets between first and second side edges and extending from a longitudinal end edge to an open pocket end, individual weights removably located within said pockets, first attachment means including a flexible tie member extending from a first side edge of the elongated support means and having an outer free end adapted to extend around a foot and be releasably connected to the support means to hold the support means in said wrapped position, a second flexible tie member secured to said support means adjacent said first side edge and extending outwardly of said pockets generally perpendicular to said first tie member and having an outer free end adapted to extend around an ankle and be releasably connected to the support means adjacent said second side edge for attaching the support means in said wrapped position over the arch portion of the foot with a longitudinal end edge abutting the connection of the foot and ankle.

4,322,073

ELECTRONIC GAME APPARATUS

William H. Slavik, Palos Hills, and John V. Moravec, Willow Springs, both of Ill., assignors to Nuvatec/Inc., Lombard, Ill.

Filed Oct. 27, 1978, Ser. No. 955,256
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—16 C **9 Claims**



1. A game apparatus comprising:
switch means;
a plurality of at least three indicators arranged in an array, said array having a first section and a second section;
sweep means for sequentially activating the plurality of indicators in a first sequence which proceeds from the first section to the second section and a second sequence which proceeds from the second section to the first section;
means, responsive to the switch means, for altering the operation of the sweep means to terminate the sequential activation of the plurality of indicators in the first sequence upon operation of the switch means, and to initiate the sequential activation of the plurality of indicators in the second sequence;
means for automatically selecting the rate at which indicators are sequentially activated in the second sequence, said selecting means operating to select a first rate when the switch means is operated before a predetermined point of the first sequence, and a second rate when the switch means is operated after said predetermined point in the first sequence, wherein the second rate is faster than the first rate.

4,322,074

ELECTRONIC GAME SYSTEM

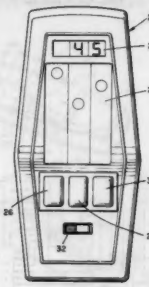
David F. James, Redondo Beach; Peter A. Oliphant, Van Nuys, and Timothy A. Effler, Torrance, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 18, 1980, Ser. No. 113,166
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—1 E **25 Claims**

1. In an electronic game, the combination comprising:
display means having illuminatable segments configured in an array of a plurality of rows and a plurality of columns;
means for selectively illuminating at least one segment in a predetermined column;
means for successively illuminating, one at a time, segments in said predetermined column commencing with the segment adjacent said at least one segment;
means for monitoring the row occupied by the then-illuminated segment;
a plurality of manually operable switches equal in number to

the number of columns, each of said switches being positioned adjacent to, and in alignment with, one of said columns; and

means responsive to said monitoring means and manual



operation of the one of said switches adjacent said predetermined column for interrupting the sequence of illumination to cause one of (a) reversing the direction of successive illumination and (b) stopping the successive illumination and displaying the then-illuminated segment.

4,322,075

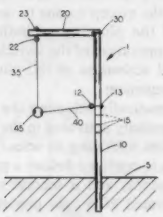
BATTING PRACTICE DEVICE

William T. Hynes, 2824 Hogan Ct., Falls Church, Va. 22043

Filed Sep. 19, 1980, Ser. No. 188,797

Int. Cl.³ A63B *69/40*

U.S. Cl. 273—26 E **12 Claims**



1. A batting practice device comprising:

(a) a single vertical support rigidly secured in a substantially vertical position;

(b) a horizontal support secured at one of its ends to the upper end of said vertical support;

(c) a first non-elastic tether having one of its ends attached to the other end of said horizontal support;

(d) a second non-elastic tether having one of its ends attached intermediate the ends of said vertical support, said first tether being of such a length and secured at a point on said horizontal support such that its length added to the length of the second tether will be substantially greater than the distance between the point at which the first tether is secured to the horizontal support and the point at which the second tether is secured to the vertical support; and

(e) a ball secured to the other end of each of said first tether and said second tether such that said ball is suspended from said apparatus above the ground.

4,322,076

BALL-PLAYING RACKET

Hans Bertram, and Leo Ramesohl, both of Essen, Fed. Rep. of Germany, assignors to Marsteller & Killmann KG, Essen, Fed. Rep. of Germany

Filed May 19, 1980, Ser. No. 151,462

Claims priority, application Fed. Rep. of Germany, May 22, 1980, 2920680

Int. Cl.³ A63B *51/00*

U.S. Cl. 273—73 D **6 Claims**

1. A racket, particularly a tennis racket, comprising: a substantially loop-shaped frame bent from a rod-shaped member; elastic strings spanning criss-cross said frame; said frame having two converging end portions defining a V-shaped section; a framed wedge-shaped member inserted in said V-shaped section between said end portions and being immovably secured thereat and having a side bordering the surface formed by said strings spanning criss-cross said frame; a handle extending said end portions, said end portions extending substantially deep into said handle; a plurality of said strings extending lengthwise at the center region of said surface and being guided with freedom of sliding movement through said side of said wedge-shaped member and passed through said wedge-shaped member; said wedge-shaped member having sides extending along a portion of said end portions and having terminal portions converging to an intersection, means attaching said terminal portion, said plurality of strings after passing through said wedge-shaped member being attached to said attachment means, said plurality of strings converging within said wedge-shaped member to said attachment means and being visible through a free open central region of said wedge-shaped member.

4,322,077

WRIST BAND FOR TENNIS RACKETS AND THE LIKE

Gustaaf Van't Hof, 10021 Lesterford Ave., Downey, Calif. 90241

Filed Jan. 21, 1980, Ser. No. 113,957

Int. Cl.³ A63B *49/08*

U.S. Cl. 273—75 **12 Claims**

1. A wrist band for attachment to the handle of a tennis racket or the like for use in securing the racket to the wrist of a player, wherein the racket handle has a grip and an end face adjacent the end of the grip, and wherein the wrist band can be inserted into a hole drilled in said end face without removing the grip from the racket, the wrist band comprising:

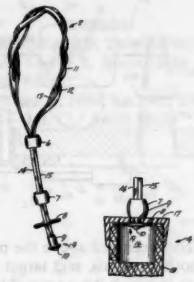
an elongated flexible strap having a loop spaced from an end of the strap;

a fixed sleeve secured to the end of the strap, the sleeve having a generally rounded outer surface;

a rim on the sleeve projecting outwardly from the generally rounded outer surface of the sleeve;

a base plate loosely fitted around the outer surface of the sleeve, the base plate protruding outwardly away from the rim on the sleeve and being retained around the outer

surface of the sleeve by contact with the rim, the sleeve and the base plate being adapted to be inserted in the hole drilled in the end face of the racket handle, with the base plate bearing against the end face and bridging the hole with the rim against the base plate to retain the strap in the end of the racket handle;



means secured to the strap on the side of the base plate opposite the rim of the sleeve for holding the strap in a fixed position relative to the end face of the handle; and

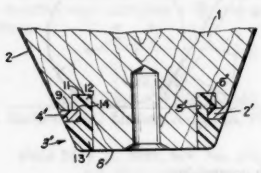
means for adjusting the size of the loop for tightening the loop around the player's wrist.

4,322,078

BOWLING PIN BASE

Rodney C. Mallette, Lowville, N.Y., assignor to AMF Incorporated, White Plains, N.Y.

Filed Jun. 18, 1980, Ser. No. 160,783
Int. Cl.³ A63D *9/00*
U.S. Cl. 273—82 B **1 Claim**



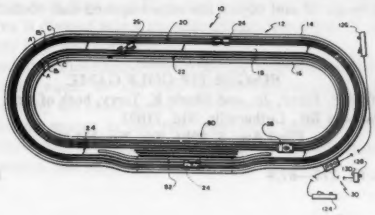
1. In a bowling pin comprising an all wood core having an exposed wood flat bottom surface, an exterior plastic ionomer resin cladding on said wood core, and a nylon base insert at the bottom of said core, the bottom annular corner of said core having a peripherally extending exterior facing groove formed therein, said corner groove being generally L-shaped in cross section and said L-shape facing radially outward, the base portion of the L-shaped groove being spaced radially inwardly from the outer surface of said core thereby leaving a peripherally extending core flange, said base portion further being spaced longitudinally inwardly from said core flange, said nylon base insert being annular in shape and having an annular exterior facing central groove extending thereabout whereby said nylon base insert is generally C-shaped in cross section, said base insert being seated in said L-shaped corner groove, the base portion of said C-shaped insert being seated in said base portion of said L-shaped groove such that the lower surface of said central groove is coplanar with said core flange, the upper portion of said C-shaped insert extending outwardly from said base portion of said insert and being substantially coextensive with the outer surface of said core and in conjunction with said flat bottom of said core completing the base of said bowling pin, and said cladding at the bottom of said pin terminating in a thick inwardly-extending annular flange, said bottom cladding flange extending into said core flange and the annular groove of the C-shape of said insert to lock said insert to said wood core and cladding.

4,322,079

RACE SET WITH DETOUR

Julius Cooper, New Hyde Park, and Neil Tilbor, Fresh Meadows, both of N.Y., assignors to Ideal Toy Corporation

Filed Oct. 17, 1980, Ser. No. 198,025
Int. Cl.³ A63F *9/14*
U.S. Cl. 273—86 B **7 Claims**



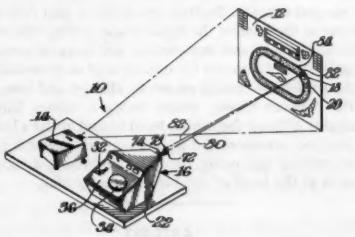
1. A toy vehicle game comprising a flat slotless track defining at least two vehicle lanes permitting toy vehicles to move along the track surface in two generally parallel paths of travel, at least one controllable toy vehicle including an electric motor and means for causing the vehicle to switch from one lane to the other; current supply means in said track for suppiying current to said motor and operator operable control means for controlling the supply of current to said motor and actuating said means for causing the vehicle to switch lanes, and a drone vehicle constrained for movement in one of said lanes in a direction opposite to that of said controllable vehicle; said track including a detour track section having guide walls defining a lane section in the other of said lanes directing a controllable toy vehicle in said other lane along a path of travel initially away from said one lane and than back towards said one lane whereby a controllable vehicle on said track can be operated to move into said other lane before entering said detour track section to avoid collision with a drone vehicle in or approaching said detour track section in said one lane.

4,322,080

IMAGE PROJECTING AMUSEMENT DEVICE

Hugh Pennington, 307 Marsh Rd., Wilmington, Del. 19809

Filed Mar. 20, 1980, Ser. No. 132,092
Int. Cl.³ A63F *9/14*; F41J *5/02*
U.S. Cl. 273—86 B **20 Claims**



1. An amusement device comprising a target in the form of a course and at least one obstacle, said course being of a predetermined light intensity and said obstacles being of predetermined differing light intensities, means for projecting an image of a moving object on said target, said image having a recognizable orientation, means for controlling the movement of said image of said object on said target whereby a player may

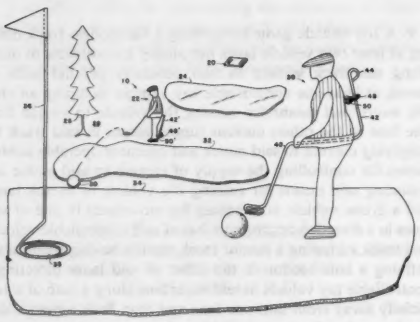
attempt to guide said image of said object over said course by said image of said object being superimposed over said course and said player may attempt to avoid said image of said object contacting said obstacles by said image of said object being superimposed on said obstacles, said movement controlling means including linear movement control means and turning movement control means for selectively moving said image on said course and for permitting the orientation of said image to be changed while said image is being moved linearly, light intensity sensing means movable with said image of said object for detecting when said image of said object has superimposed any of said obstacles, and indicating means for indicating when said image of said object has superimposed said obstacles.

4,322,081

FINGER TIP GOLF GAME

Wilfred F. Terry, Jr., and Marie K. Terry, both of Apt. 203, 90 Padonia Rd., Lutherville, Md. 21093

Filed Apr. 6, 1981, Ser. No. 251,102
Int. Cl.³ A63F *7/06*
U.S. Cl. 273—87.4 **1 Claim**



1. In a golf game with simulated golfers having human characteristics, golf balls, and golf course features, the improvement comprising: a golfer including a body having front and back, a wire having an axle pivotally journalled in a bore in the body, means retaining the wire in said journal comprising: an integral actuator leading at a first angle in a vertical plane from the axle behind and an integral shank leading downward at a second angle from the axle in front; a portion of the wire in the shape of a clubhead integrally forming a club with said shank; means permitting a user with one finger to hold said golfer in alignment and simultaneously to manipulate the respective said integral actuator to strike a golf ball, comprising said integral actuator leading upwardly at said first angle to a terminus at the level of the head of said golfer; resilient biasing means above said axle connecting said integral actuator with said golfer's body; means for quickly and economically replacing the resiliently biasing means to change said bias, comprising the resilient biasing means being a rubber band, means detachably affixing the rubber band to said golfer's body and to said integral actuator; and means counter-balancing said club for smoothing the swing thereof, comprising a loop on said terminus at the level of the head of said golfer.

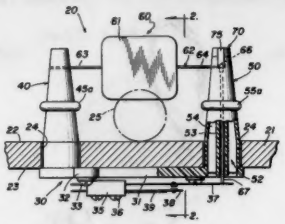
4,322,082

SPINNING TARGET ASSEMBLY FOR PINBALL GAME

Albin Peters, Chicago, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Jan. 5, 1981, Ser. No. 222,366
Int. Cl.³ A63B *67/14*
U.S. Cl. 273—127 D **16 Claims**

1. A spinning target assembly for a pinball game having a playfield board on which a pinball rolls, said target assembly comprising an integral one-piece frame member having two substantially parallel spaced-apart post portions interconnected only adjacent to one end thereof by a base portion, said frame member being mountable on the associated playfield board with only the distal ends of said post portions extending above the playfield board, and a target member carried by said



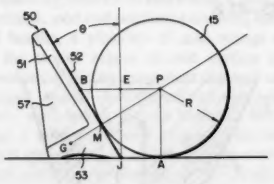
post portions therebetween and above the playfield board for rotation about a horizontal axis, said target member having a normal rest position in which it is engageable by an associated pinball rolling between said post portions for spinning said target member about said axis.

4,322,083

GOLF CLUB HEAD

Sigeru Imai, Ito, Japan, assignor to Shintomi Golf Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1979, Ser. No. 83,329
Claims priority, application Japan, Oct. 26, 1978, 53-147366
Int. Cl.³ A63B *53/04*
U.S. Cl. 273—167 F **4 Claims**



1. A golf club comprising:

a club head;

a substantially flat club face on one side of said head, said club face being adapted to strike a golf ball; said club face having upper and lower edges;

said club face being disposed at an angle with respect vertical when said club face is in an address position with respect to a golf ball; said angle being a loft angle (θ) which determines the amount of loft imparted a golf ball when it is struck by the club face; said loft angle (θ) being greater than zero;

said club face having a point thereon at which a golf ball will contact said club face when said club is in the address position with respect to the golf ball, said point being a meet point (M), the position of said meet point (M) being a function of the magnitude of the loft angle (θ) of said head, such that the higher the loft angle (θ), the closer said meet point (M) will be to the lower edge of said club face, the distance (JM) between the meet point (M) on said club face and the lower edge (J) of said club face being given as follows:

$$JM = R \sec\theta(1-\sin\theta)$$

where

R: radius of standard golf ball,

θ: loft angle;

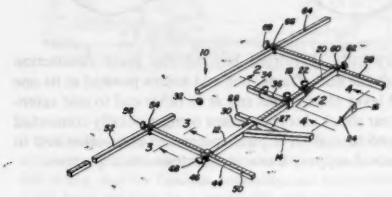
said club head having a mass and having a center of gravity of its mass, said center of gravity being spaced from said club face, said center of gravity, when viewed from a cross section taken in plane perpendicular to the club face, being located on a line substantially perpendicular to said club face through said meet point (M).

4,322,084

GOLFER'S STANCE TRAINING DEVICE

Carl L. Reece, and Gloria J. Reece, both of 1453 State St., Porterville, Calif. 93257

Filed Sep. 5, 1980, Ser. No. 184,338
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—187 R **10 Claims**



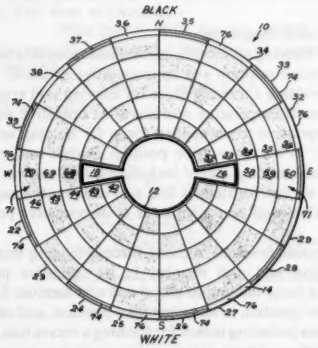
6. A golf stance training device, comprising:
a body member in the form of an elongated bar;
a first foot indicator means including an elongated bar attached to said body member at an oblique angle thereto;
a second foot indicator means comprising an elongated bar slidably disposed on said body member perpendicular thereto;
a first ball location indicator affixedly attached to said body member and including an adjustable pointer extending therefrom; and
a second ball location indicator slidably attached to said body member and including a second pointer extensible therefrom.

4,322,085

CIRCULAR CHESS GAME

Steven M. Stallard, 2632 Lindsay Ave., Apt. B2, Louisville, Ky. 40206

Filed May 21, 1980, Ser. No. 152,109
Int. Cl.³ A63F *3/02*
U.S. Cl. 273—261 **8 Claims**



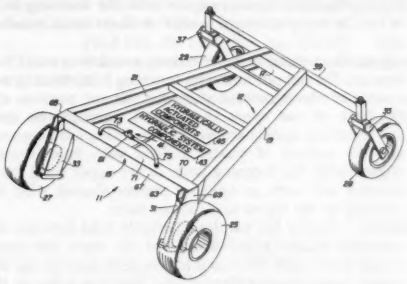
1. A flat, two-dimensional circular chess game board apparatus that is adapted for playing chess and accommodates a plurality of standard chess pieces controlled by two opposing players comprising:
a. a playing area of circular configuration that is divided first by forming a non-playing inner central circle having a pair of non-playing diametrical flaps or barriers at the East and West stations of the circle, and further divided by means of a plurality of 8 radial files on the South side of the flaps or barriers, and by means of a like plurality of 8 radial files on the North side of the flaps or barriers;
b. and the radial files of the circular playing area being further divided by a series of concentric ranks which extend from the inner circle to the outer circular configuration;
c. and at least two playing spaces extending radially outward from each East and West flap or barrier, so the playing area is divided into a plurality of playing spaces of alternate light and dark spaces;
d. and each diametrical flap or barrier extending radially in length equal to the two innermost concentric ranks whereby the chess pieces would be first loaded onto the playing spaces in the two innermost concentric ranks below and above the non-playing diametrical flaps or barriers, and separated thereby.

4,322,086

HYDRAULIC OIL RESERVOIR VENT

Clarence C. Bennink, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 14, 1980, Ser. No. 130,389
Int. Cl.³ B60R *27/00*
U.S. Cl. 280—5 R **1 Claim**



1. In a mobile vehicle comprising:
(a) a tubular frame including an elongated beam;
(b) a set of wheels supporting said frame, said beam being substantially parallel to a plane when said wheels are in contact with said plane;
(c) a hydraulically controlled component mounted on said frame;
(d) a hydraulic system for operating said component and including an oil reservoir, said beam forming an oil reservoir container wherein the improvement comprises:
said beam including an upper wall portion defining first and second spaced openings,
said reservoir further including (1) first and second conduit means, each having a first end connected, respectively, to said first and second openings and (2) a T-shaped vent coupling for restricting the flow of air into and out of said first and second conduit means, said coupling comprising pair of oppositely extending tubular legs interconnected between a second end of each of said first and second conduit means, a third tubular leg connected at one end to said pair of legs and a porous plug cap mounted in the other end of said third leg.

4,322,087

BICYCLE HANDLE BAR CONNECTOR

Lyle F. Addicks, 12313 Brookshire Ave., Downey, Calif. 90242

Filed Sep. 4, 1980, Ser. No. 183,934
Int. Cl.[3] B62K 21/22
U.S. Cl. 280—279 9 Claims

1. A connector for adjustably attaching a handle bar onto the front fork of a bicycle, said connector comprising:

a lower clamp half including;

a tubular stem;

a lower sheet metal member having a middle arcuate portion and flat end portions with fastening holes therein, one of said flat end portions having an opening therein for receiving the upper end of said tubular stem and being anchored thereto by welding;

a coating of plastic molded about the flat end portions and the back of the lower sheet metal member and about the upper side portion of the tubular stem, the inner surface of the middle arcuate portion of the lower sheet metal member being left uncoated, and the end portions of the coating having holes therein aligned with the fastening holes in the flat end portions of said lower sheet metal member; and

an upper sheet metal member having a middle arcuate portion and flat end portions with fastening holes therein; and

a coating of plastic molded about the flat end portions and the back of said upper sheet metal member, the inner surface of the middle arcuate portion being left uncoated, and the coating of plastic molded with holes therein aligned with the fastening holes in the upper sheet metal member and with an opening therein aligned with the opening on the top of said tubular stem;

whereby a handle bar can be adjustably held between the uncoated arcuate inner surfaces of the upper and lower clamp halves and the clamp halves held together by fastening means passing through the fastening holes on the ends thereof; and

means for use in adjustably attaching said stem to the front fork of the bicycle.

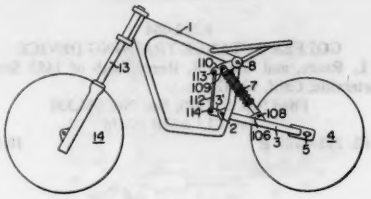
4,322,088

REAR WHEEL SUSPENSION FOR A MOTORCYCLE

Shinichi Miyakoshi, Fujimi, and Kazuhiro Yamamoto, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,485
Claims priority, application Japan, Feb. 13, 1979, 54-16827[U]
Int. Cl.[3] B62K 25/04
U.S. Cl. 280—284 3 Claims

1. A rear wheel suspension for a motorcycle comprising a body frame, a rear wheel support frame pivotally mounted on said body frame for upward and downward movement relative thereto and rotatably supporting a rear wheel, rear shock absorber means disposed between said body frame and said rear wheel support frame for damping the relative movement between said body frame and said rear wheel, means for adjusting the damping force of said shock absorber means in a manner such that the rate of increase in the compression stroke of the shock absorber means is increased in proportion to the upward movement of said rear wheel relative to said body frame, said means for adjusting the damping force of said shock absorber means comprises lever plate means pivotally mounted on a rear upper portion of said body frame, an extension formed integral with said rear wheel support frame and projecting forwardly therefrom beyond the pivot connection thereof with the body frame, pull rod means pivoted at its one end to said lever plate means and at its other end to said extension, said rear shock absorber means being pivotally connected at its one end to said lever plate means and at its other end to said rear wheel support frame at its intermediate portion.

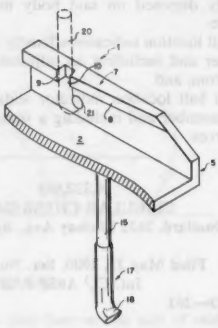


4,322,089

SKI BRAKE

Richard G. Spademan, Box 6410, Incline Village, Nev. 89450

Filed Sep. 10, 1979, Ser. No. 73,997
Int. Cl.[3] A63C 7/10
U.S. Cl. 280—605 7 Claims



1. A ski brake comprising:

means for forming a movable arm member movable between an operative position and an inoperative position;

means providing a moving force for moving said arm member from its inoperative position to its operative position;

means responsive to an applied force for holding said arm member in its inoperative position against said moving force, said holding means including a resilient material;

a braking surface located on said arm member for engaging snow when said arm member is in its operative position; and

means separate from said moving force providing means for restraining said arm member in its operative position against a force tending to move said arm member from its operative position to its inoperative position, said restraining means including means for forming a recess into which said holding means moves when said arm member is moved to its operative position by said moving force, said means forming said recess including an inclined wall surface for guiding said holding means into said recess when said arm member is moved from its inoperative position to its operative position, said inclined wall surface applying

an increasing bending stress to said holding means as said arm member is moved from its inoperative position to its operative position.

4,322,090

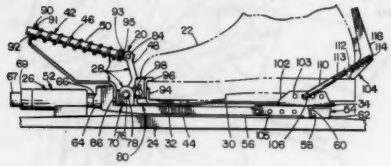
SKI MOUNTAINEERING BINDING

Charles E. Loughney, 4225 - 83rd Ave. SE., Mercer Island, Wash. 98040

Filed Feb. 13, 1980, Ser. No. 121,019

Int. Cl.³ A63C 9/08

U.S. Cl. 280—614 **10 Claims**



1. Ski mountaineering binding for rigidly holding a ski boot relative to a snow ski, subject to safety releases, during downhill skiing, and for flexibly, rotatably, yet controllably, holding a ski boot relative to a snow ski, subject to safety releases, during alpine ski touring, comprising:

(a) a downhill safety release ski binding; and

(b) a ski touring binding pivotally secured at its forward toe end to the forward toe portions of the downhill safety release ski binding for pivoting in a vertical plane above a snow ski and removably secured at its rear heel end to the rear heel portions of the downhill safety release ski binding, having;

(1) a return spring mechanism used during ski touring creating a spring force to constantly tend to keep the ski touring binding in a non pivoted position adjacent the downhill safety release ski binding, having;

(2) components in the return spring mechanism to alter the line of action of the created spring force, changing its created torque, to effectively reduce the application of the returning spring force as an intentional ski boot motion pivots the ski touring binding at its heel end upwardly away from the downhill safety release ski binding.

4,322,091

CROSS COUNTRY SKI BINDING

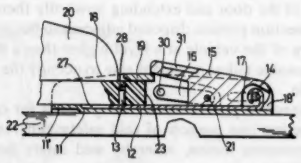
Ralf Storandt, Leonberg, Fed. Rep. of Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH, Leonberg, Fed. Rep. of Germany

Filed Feb. 9, 1979, Ser. No. 10,966

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807592

Int. Cl.³ A63C 9/18

U.S. Cl. 280—615 **2 Claims**



1. A cross country ski binding for securing a ski shoe by a forward sole portion thereof to a ski, the binding comprising: a housing part adapted in an engaged position of the binding to locate said forward sole portion, a positioning device adapted to position said forward sole portion relative to said housing part, and including at least one generally vertically disposed member engageable in recess means in an underside of said forward sole portion, and an actuation mechanism adapted to effect relative movement between said positioning device and said housing part, wherein said housing part includes first and second rearwardly diverging side members, and upper wall means extending between said side members and cooperating therewith to define a chamber open to the rear of the binding, with the internal dimensions of said chamber being substantially equal to the dimensions of said forward sole portion, wherein said actuation mechanism includes a pivotable actuating lever, is mounted on the binding and is operable, on pivotal movement of said actuating lever, to effect relative movement of said positioning device and said housing part between a disengaged position, in which said at least one generally vertically disposed member is spaced longitudinally of the ski from said upper wall means so that said recess means in said ski shoe can be positioned over said at least one generally vertically disposed member, and an engaged position in which said at least one generally vertically disposed member is operative to retain said forward sole portion within said chamber in contact with said side members, and wherein said actuation mechanism is a toggle lever mechanism comprising first and second toggle lever links respectively pivotally connected by their one ends to said first and second side members, and at their other ends to a toggle lever, said toggle lever, which forms said actuating lever, being pivotally connected to a forward end of said positioning device via a transverse pin, said transverse pin being guided for sliding movement in longitudinal slots formed in said first and second side members.

4,322,092

CROSS COUNTRY SKI BINDING

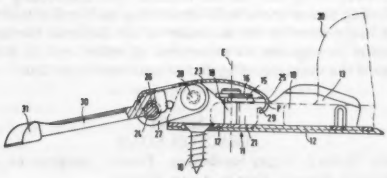
Rudi Feucht, Weissach; Manfred Schmidt, Sindelfingen, and Peter Biermann, Leonberg, all of Fed. Rep. of Germany, assignors to Vereinigte Baubeschlagfabriken Gretsch & Co., Ltd., Leonberg, Fed. Rep. of Germany

Filed Feb. 20, 1980, Ser. No. 123,051

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1979, 2906485

Int. Cl.³ A63C 9/20

U.S. Cl. 280—615 **22 Claims**



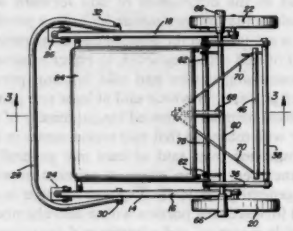
1. A cross country ski binding for securing a ski shoe by a forwardly directed extension of its sole to a ski, the binding comprising a recess open at its rear end and defined by at least first and second side walls and a top wall for supporting a said sole extension introduced through the rear end of the recess, there being at least one bracing member arranged within the recess and extending substantially at right angles to said top wall, said bracing member being adapted in operation to engage in a corresponding longitudinally extending, slot in said sole extension, which slot is open at its forward end, and a securing device engageable with a ski shoe engaged in the binding to prevent it being withdrawn rearwardly from the binding, said securing device being operative to draw the sole extension forwardly into engagement with forwardly disposed abutment means defined by at least one of said at least one bracing member and the first and second side walls, thereby enabling a shape-mating and force-locking connection to be achieved between said binding and sole extension and in which said at least one bracing member is of circular horizontal cross-section.

4,322,093

WHEELED WALKING AID WITH SEAT AND HAND BRAKE

Roger C. Otto, R.R. 1, Aurora, Nebr. 68818

Filed Mar. 11, 1980, Ser. No. 130,178
Int. Cl.³ B62B *11/00*
U.S. Cl. 280—650 6 Claims



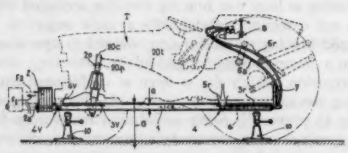
1. A wheeled walking aid including a frame defining a lower horizontal main portion having front and rear ends, a pair of rear opposite side wheels journaled from said rear end for rotation about a horizontal transverse axis, a pair of front opposite side caster wheels supported from opposite side of said front end, said frame including an upstanding handle assembly supported from said rear end and including an upper horizontal transverse handle portion, a horizontal transverse brake bar generally paralleling and supported from said handle portion beneath and guidingly shiftable toward and away from the latter and being sufficiently close to said handle portion to be gripped by a person's hand engaged with said handle portion and drawn theretoward by a hand squeezing action, a brake member shiftably supported from said frame for movement between applied and released positions, said brake member including a pair of spaced wheel braking portions engageable with corresponding rear wheels to frictionally brake the latter when said brake member is in said applied position, and connecting means connected between said bar and said brake member operative to shift the latter toward said applied and released positions responsive to movement of said bar toward and away from said handle portion, said connecting means including means operatively connecting each end of said bar to said brake member for actuation of the latter to the applied position in response to movement of either end of said bar toward the corresponding end of said handle portion.

4,322,094

TRACTOR LOAD

Emile Bobard, Gigny-les-Beaune, France, assignor to Jeune Bobard, Beaune, France, a part interest

Filed Jul. 16, 1979, Ser. No. 57,886
Claims priority, application France, Jul. 18, 1978, 78 21639; Apr. 17, 1979, 79 09831
Int. Cl.³ B60B *39/00*
U.S. Cl. 280—755 21 Claims



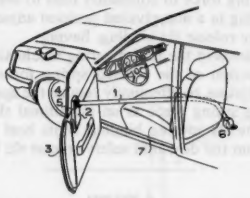
1. A weighting device adapted to be suspended beneath a tractor and between both a first and a second pair of wheels of said tractor for increasing the traction and stability of said tractor, said device comprising a flat, elongated plate having a plurality of portions, at least one of said portions having a width less than the spacing between said first pair of wheels, said first pair of wheels adapted to pivot in order to change the direction of said tractor and the width of said at least one portion being sufficiently narrow to allow said first pair of wheels to generally freely pivot, said plate having a longitudinal dimension such that it extends to a rear end of said tractor and beyond a front end of said tractor, said plate further comprising means, adjacent to said tractor front end, for carrying removable weights to prevent said tractor from rearing, said device further comprising means for moving said plate and said weights substantially parallel to the ground, whereby said device comprises a relatively lightweight structure adapted to carry weights necessary to increase the traction and stability of a tractor.

4,322,095

SAFETY BELT DEVICE FOR VEHICLES

Junichi Takizawa, Isesaki, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1979, Ser. No. 64,441
Claims priority, application Japan, Aug. 7, 1978, 53-96039; Jan. 19, 1979, 54-5863[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—802 12 Claims



1. A device for securing an occupant of a vehicle having a door without a glass frame and a seat, said door including an inner panel adjacent said seat, said device comprising

a safety belt,

retractor means for winding and unwinding, respectively, said safety belt and for securing said safety belt when an excessive impact force is exerted on said safety belt, said retractor means being mounted in a central lower portion of the vehicle,

a door pole rigidly connected to a rear edge of said inner panel of the door and extending upwardly therefrom into a connection portion disposed adjacent to but spaced from the top of the vehicle at a level higher than a shoulder of a reasonable tallest occupant able to occupy the seat of the vehicle,

said connection portion constituting means for operatively connecting one portion of said safety belt remote from said retractor means, whereby said safety belt extends from said retractor means to said connection portion of said door pole at portions of said safety belt higher than the shoulder of the occupant with said safety belt extending diagonally across the body of the occupant when the door is closed,

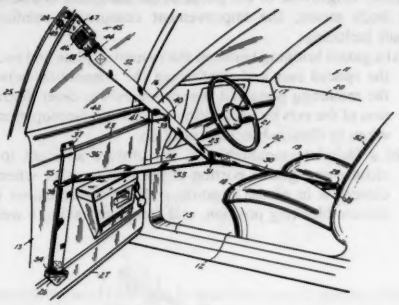
and an outside panel included in said door, said outside panel having a portion extending upwardly opposite said door pole.

4,322,096

PASSIVE RESTRAINT SYSTEM

Wallace C. Higbee, Romeo, and Regis V. Pilarski, Utica, both of Mich., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 29, 1978, Ser. No. 964,699
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 9 Claims



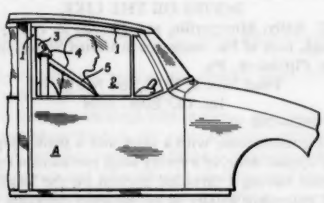
1. A passive restraint harness for automatic deployment of safety belt webbing comprising:
an upper fixed webbing anchor on the trailing edge and near the top edge of a vehicle door;
a lower fixed webbing anchor adjacent the trailing edge and lower edge of a vehicle door;
safety belt webbing interconnecting said two fixed anchors;
a retractor adjacent the inboard hip of a person seated adjacent said door;
means slidably connecting the intermediate portion of said webbing to said retractor;
a track assembly having a substantially vertical track secured to said door in a stand-off facing relationship;
a slider ring over said track and movable vertically thereon and over which is trained said webbing;
a cable means connected to said ring and to the vehicle through said door whereby upon opening said door said ring is lifted and on closing said door said ring is lowered on said track whereby lifting of said ring lifts said webbing out-of-contact with said person as said connecting means is withdrawn from said retractor.

4,322,097

EMERGENCY RELEASE DEVICE OF A SAFETY BELT

Jacques Provensal, Maurepas, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Feb. 11, 1980, Ser. No. 120,128
Claims priority, application France, Feb. 9, 1979, 79 03327
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—808 11 Claims



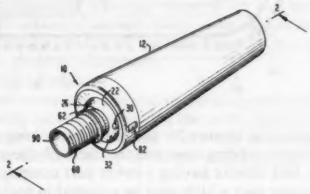
1. An emergency release device of a safety belt anchoring bracket which is anchored to a frame element in the passenger space of a vehicle for instantaneous release of the anchoring bracket and of the safety belt, comprising;
an anchoring bracket fixed to the frame element;
a safety belt return retaining the safety belt;
a bolt and nut comprising a disengageable bolt and nut assembly, said assembly securing the return to the bracket;
a releasable open fork element straddling the bolt between the nut and the bracket;
an elastic releasing means retained between the bracket and the return by the bolt;
and
a control lever connected to the releasable open fork for releasing said fork and said nut and bolt assembly from the bracket when the lever is rotated.

4,322,098

SWIVEL JOINT

Jerome Warshawsky, Baldwin Harbor, N.Y., assignor to I. W. Industries, Inc., Melville, N.Y.

Continuation of Ser. No. 38,014, May 11, 1979, abandoned. This application Oct. 31, 1980, Ser. No. 204,242
Int. Cl.³ F16L *27/04*
U.S. Cl. 285—264 7 Claims



1. A swivel assembly, comprising:
a housing having a bore extending therethrough along a central axis, said housing having an end wall with an opening about said axis extending therethrough; a generally spherical swivel member rotatably and swivelly disposed in said bore and including an extension protruding through said opening, the portion of said extension within said opening being substantially smaller in transverse cross-section than the opening to permit limited swivel movement of said swivel member in said housing, said bore having first and second sectional walls, with said first sectional wall having a first diameter being smaller than said second sectional wall to thereby form a first wall, said first sectional wall having a threaded bore portion remote from said first wall and about said central axis; a washer element of substantially rectangular cross-section disposed in and contacting said second sectional wall and having a flat surface on one side and a spherically curved inner edge on an opposing side for co-acting with said swivel member, said washer element abutting less than a ¼ portion of said spherical swivel member; and a helical compression spring having a substantially rectangular cross-section forming flat peripheral and flat end surfaces with closely spaced coils therebetween, said spring being disposed in said bore so that the flat peripheral surface contacts the second sectional wall, one of said flat end surfaces abuts said first wall and the other flat end surface abuts the flat surface of said washer element, the diameter of said spring cross-section being substantially three fourths the diameter of the washer cross-section such that said other flat end surface engages the major portion of said flat surface of said washer element in areas of contact therewith and so forms a substantailly contiguous extension of said washer and its cross-section along said second sectional wall which enables a compact spring to handle a heavier load, while reducing its tendency to unwind, said spring providing a stiff compressive force whereby said spring remains in abutment and does not swivel; and whereby said spherical swivel member is held in position

in said bore when subject to repeated movement under heavy loads.

4,322,099

CLAMPING CLOSURE FOR THE RELEASABLE JOINING OF THE LOCKING STRIP OF CASES, WRITING CASES AND THE LIKE

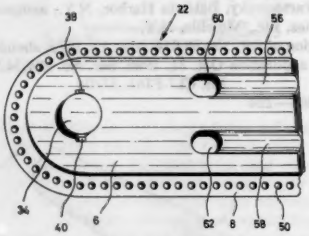
Günther Schmidt, Baden-Baden, Fed. Rep. of Germany, assignor to The Parker Pen Company, Janesville, Wis.

Filed Dec. 7, 1979, Ser. No. 101,245

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1978, 2856423

Int. Cl.³ E05C *17/52*

U.S. Cl. 292—19 **3 Claims**



1. A clamping closure for the releasable joining of a closing strip for cases, writing cases and the like with the main body of the case, said closure having a lower part comprising a spring and an upper part which may be engaged in locking engagement with said spring, characterized in that the lower part comprises a base plate (**22**) provided with a single pair of opposed continuous grooves (**14', 16"**) and one pair of opposed webs (**10, 12**), the pairs of grooves and webs being peripherally arranged and completing a full circle, a cap (**34**) equipped with two projections (**24', 26'**) corresponding to the grooves (**14', 16'**) and joined to the base plate (**22**) by frictional force with the projections (**24', 26'**) being spaced in the area of the webs (**10, 12**) and otherwise having a cylindrical circumferential wall (**32**), also a slit annular spring (**36**) in the cap with two circumferential shoulders extending from the spaces between the webs and being resiliently and radially compressible; the upper part of the closure comprising a clamping plate (**42**) with a circular orifice (**44**) essentially corresponding to the external diameter of the cap (**34**), wherein on the edge of the orifice facing the lower part an annular shoulder (**46**) is provided to radially compress the circumferential projections (**38, 40**) of the annular spring (**36**) and to lock between the said annular spring and the base plate (**22**).

4,322,100

ABUTMENT SWIVEL DOORSTOP

Lyall A. McLennan, 2896 Trinity St., Vancouver, British Columbia, V5K 1E9, Canada; John W. Ganjo, Windsor, Canada, and Tom Pomarolli, Farmington Hills, Mich., assignors to Lyall A. McLennan, Canada

Filed Dec. 3, 1979, Ser. No. 99,611

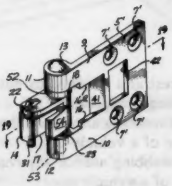
Int. Cl.³ E05C *5/02*

U.S. Cl. 292—67 **9 Claims**

1. In abutment stop mechanism for blocking opening movement of a closure swingable about an upright axis including a pintle, a mounting plate separate from the closure, mounted independently of the closure at a location adjacent to the closure when the closure is in closed position and having spaced ears defining an opening therebetween and providing sockets for the pintle, a stop member having a portion received in the opening between the spaced ears and having a bore receiving the pintle when fitted in the pintle sockets for turning of the stop member between a closure-blocking position obstructing a predetermined opening-movement path of the closure and a closure-clearing position out of the opening-movement path of the closure, in which closure-blocking position of the stop member a closure-engageable portion of the stop member, located a substantial distance from the pintle, is engageable by a stop-engageable portion of the closure to limit its movement along a predetermined opening-movement path, latch means for preventing swinging of the stop member out of closure-blocking position, and spring means urging the stop member lengthwise of the pintle in the direction to disengage the latch means, the improvement comprising reinforcing means including:

(a) a gusset bridging between the mounting plate and each of the spaced ears and reinforcing the connection between the mounting plate and the spaced ears to deter deformation of the ears by application of force on the stop member when in closure-blocking position;

(b) a faceplate mountable on the closure adjacent to the closure-engageable portion of the stop member when the closure is in closed position and the stop member is in closure-blocking position, said faceplate having a wedge-



shaped projection with one face substantially parallel to the closure-engageable portion of the stop member when the closure is in closed position and the stop member is in closure-blocking position for transmitting a compressive force toward the pintle greater than the stop member swinging force transmitted during an attempt to force opening movement of the closure;

(c) a reinforcing block mountable adjacent to one of the mounting plate ears at the side thereof opposite the closure for backing abutment with such ear when force is applied to the stop member in closure-blocking position during an attempt to force opening movement of the closure;

(d) the pintle being of hard strong material for deterring deformation of the pintle and for preventing forcing of the closure open by force on the stop member when in closure-blocking position; and

(e) the spring means including a pigtail friction fitted between the pintle and one of the mounting plate pintle sockets for preventing inadvertent removal of the pintle from such socket.

4,322,101

ADJUSTABLE SPRING LATCH FOR COKE OVEN DOORS OR THE LIKE

Calvin E. Kelly, Murrysville, and Thomas E. Nicely, Delmont Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Nov. 8, 1979, Ser. No. 92,615

Int. Cl.³ E05C *3/04*

U.S. Cl. 292—260 **5 Claims**

1. The combination, with a door and a jamb adapted to be engaged by said door, of a spring latch mechanism comprising:

a spindle having a threaded portion on the length thereof, and extending axially in an outward direction from said door normal to the plane of said door and the jamb;

a latch bar rotatably mounted on said spindle;

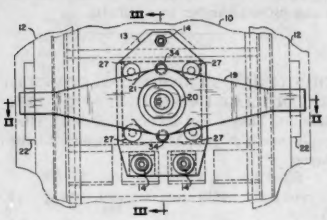
means on said jamb with which said latch bar is engageable to hold said door in closed position;

an outer pressure plate threadedly engaging said spindle;

an inner pressure plate spaced from said outer pressure plate and rigidly connected to said door;

spring means acting between said pressure plates whereby the force exerted by said spring means on said pressure plates urges said door into engagement with said jamb;

the force exerted by said spring means being adjustable by turning said spindle to move said outer pressure plate translationally with respect to said door in a direction axially along said spindle;



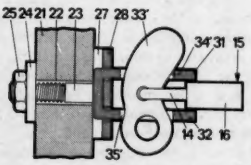
mounting means secured to said door for (a) guiding slidable movement of the outer pressure plate and spindle in a direction normal to the plane of said door and jamb, and (b) preventing rotation of said outer plate on turning of said spindle; and

means carried by said outer pressure plate for visually indicating by the relative position thereof with respect to an adjacent part of said mounting means, a measure of the force exerted by said spring means compared to a desired value thereof.

4,322,102
GUARDED LOCKING DEVICE

Erik I. Lindblom, Bjursätragatan 81, S-123 42 Bandhagen, Sweden

Continuation of Ser. No. 893,968, Apr. 6, 1978, abandoned. This application Jul. 21, 1980, Ser. No. 170,688
Claims priority, application Sweden, Apr. 6, 1977, 7704006
Int. Cl.³ E05C *19/08*
U.S. Cl. 292—281 **1 Claim**



1. A guarded locking device for receiving a padlock comprising:

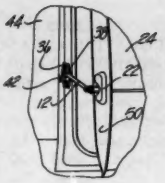
a U-shaped member having two spaced apart plate limbs with a through opening; and

a pin for insertion through said opening, said pin having an aperture therethrough for receiving the shackle of the padlock between said plate limbs in the engaged position of the device and wherein said pin is flat and is curved in the longitudinal direction thereof forming a concave edge and a convex edge to have said concave edge facing the free ends of the limbs of the U-shaped member when the pin is received by the openings in said limbs and further wherein said pin urges the U-shaped limbs together when force is applied to said padlock.

4,322,103
DOOR HOLDING DEVICE

Terry R. Acton, 3037 Newark, Lapeer, Mich. 48446

Filed May 12, 1980, Ser. No. 149,259
Int. Cl.³ E05C *17/54*
U.S. Cl. 292—288 **5 Claims**



1. For use with a vehicle having a body and a door pivotal around a substantially vertical axis and movable between an open and a closed position with respect to the body, either said door or said body having a latch mechanism and the other of said door or said body having a lock element, wherein the latch mechanism releasably lockingly engages the lock element on the other of said door or said body when said door is in its closed position, a device for holding the door in a predetermined open position comprising:

an elongated member;

first means secured to one end of the elongated member for releasably lockingly engaging the latch mechanism;

second means secured to the other end of the elongated member for releasably lockingly engaging the lock element; and

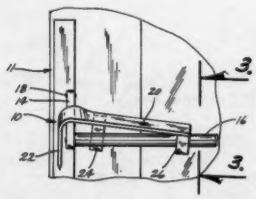
wherein the lock element comprises a cylindrical striker pin and wherein said first means comprises a cylindrical pin substantially identical to said lock element wherein said second means comprises a pair of elongated tabs extending laterally outwardly from at least one side of said elongated member, said tabs being spaced apart by an amount sufficient to receive the striker pin therebetween; and

wherein with said first means attached to said latch mechanism, said elongated member extends substantially horizontally so that the weight of the device maintains the locking engagement between said second means and the lock element.

4,322,104
DOOR GUARD

Edward H. Matthews, Jr., and William A. White, Jr., both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jul. 14, 1980, Ser. No. 168,493
Int. Cl.³ E05C *15/02*
U.S. Cl. 292—288 **4 Claims**



1. The combination of a door structure including a door frame, and a door having opposite sides, hinges on one side of said door connected to said frame, a latch mechanism, a horizontal panic bar pivotally secured to said door and operatively connected to said latch mechanism, and a stop means for said panic bar, comprising,

an L-shaped bar having a front leg normally parallel to said panic bar, and a side leg perpendicular to said panic bar,

means on said front leg detachably embracing said panic bar and holding said L-shaped bar so that said side leg will engage and bind against said door frame to prevent pivotal movement of said panic bar with respect to said door.

4,322,105

WINDOW DECORATIVE ARRANGEMENT FOR AUTOMOTIVE VEHICLE

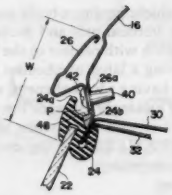
Kiyoshi Onda, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 28, 1979, Ser. No. 107,831

Claims priority, application Japan, Oct. 1, 1979, 54-1981[U]

Int. Cl.³ B60J *1/20*

U.S. Cl. 296—93 **8 Claims**



1. A window decorative arrangement for an automotive vehicle body structure having a window glass fixedly fitted thereto, comprising, in combination:

a weather strip fixedly holding the window glass to the vehicle structure, and

a molding attached to the outer portion of the vehicle body structure and extending along the outer perimeter of the weather strip,

wherein said molding has a marginal portion secured to the outer portion of the vehicle body structure along and in proximity to the outer perimeter of said weather strip, and

wherein said weather strip has a lug portion extending along said molding with a small clearance between the top thereof and the outer periphery of said molding and arranged to conceal the marginal portion of said molding behind said lug portion.

4,322,106

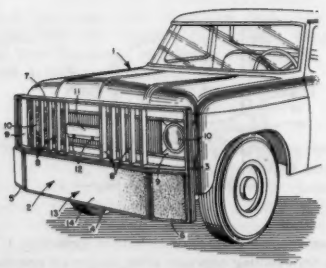
PUSH BUMPER FOR TOW TRUCKS

Ronald R. Nespor, c/o Chevron, Inc., R.D. #7, Rte. 62, Mercer, Pa. 16137

Filed Jun. 19, 1978, Ser. No. 916,491

Int. Cl.² B60R *21/14*

U.S. Cl. 296—121 **19 Claims**



1. A vehicle bumper comprising:

frame means defining a flat central portion and rearwardly canted end portions;

front plate means secured to the face of said frame means to form a front plate and frame assembly;

back plate means secured to the rear of said frame means; said back plate means bearing upper and lower flange means which engage the front plate and frame assembly and maintain the back plate means in spaced relation thereto; said back plate means further comprising right and left flange means which project forwardly into supporting engagement with the canted end portions of said front plate and frame assembly; and

mounting means secured to the rear of said back plate means for attaching the bumper to a vehicle.

4,322,107

STRUCTURE FOR MOUNTING COVER OF CONTROLLER IN BATTERY FORK LIFT

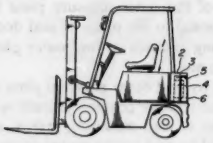
Hiroshi Ishizuka, Tokyo, and Kazuhiko Kunogi, Hino, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

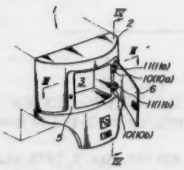
Filed May 1, 1980, Ser. No. 145,728

Claims priority, application Japan, May 11, 1979, 54/63198[U]

Int. Cl.³ B60R *18/02*

U.S. Cl. 296—146 **8 Claims**





1. In a battery-driven fork lift truck including at the rear end thereof a counterweight formed therein with a controller room having an opening in a substantially vertical rear end surface of the counterweight, and a comparatively thick and heavy cover which is mounted on the counterweight to close the opening, a structure for mounting the cover comprising in combination:

upper and lower body-side hinge members secured integrally to the counterweight along a vertical edge of the opening, said upper and lower body-side hinge members being steel bars with bent legs of the two hinge members extending toward each other; and

upper and lower cover-side hinge members secured integrally to the cover along a vertical edge thereof so as to be engaged with and disengaged from the upper and lower body-side hinge members, respectively;

said upper cover-side hinge member being a bent steel sheet with a U-shaped cross section having a pair of horizontal legs extending in one direction, and first means extending across free ends of the legs to prevent horizontal displacement of the upper body-side hinge member when the upper body-side hinge member is in engagement with the upper cover-side hinge member;

said lower cover-side hinge member being a bent steel sheet with a U-shaped cross section having a pair of horizontal legs extending in opposite directions of the legs of said upper cover-side hinge member, second means extending across free ends of the legs to prevent horizontal displacement of the lower body-side hinge member when the lower body-side hinge member is in engagement with the

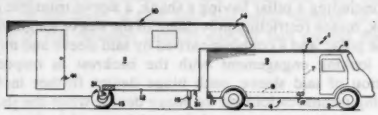
lower cover-side hinge member, and third means extending across top edges of the legs to abut with the top end of the lower cover-side hinge member thus preventing the cover from displacing vertically downwards with respect to the counterweight.

4,322,108

CONVERTIBLE VEHICLE

William L. McPherson, 3669 Lauria Rd., Bay City, Mich. 48706

Filed May 5, 1980, Ser. No. 146,511
Int. Cl.³ B60P 3/42
U.S. Cl. 296—164 7 Claims



1. A vehicle convertible from a van to a camper and vice versa, said vehicle having a wheeled frame supporting a van body having a driver's compartment at its forward end and passenger or cargo space rearwardly of said compartment, said body being cut vertically aft of said compartment and horizontally adjacent said frame to form a separable body section; separable means cooperable between said section and the remainder of said body for separably coupling said section to the remainder of said body; a wheeled camper unit having a body adapted to overlie said frame when said separable body section is removed from said frame; a first set of coupling devices carried by said frame, a first group of the coupling devices of said first set being located adjacent said compartment and a second group thereof being located rearwardly of said compartment; a second set of coupling devices carried by said camper and corresponding in number to the number of coupling devices of said first set and being located in positions to register with the coupling devices of said first set when said camper is in a position to be coupled to said frame; movable latch means carried by each coupling device of one of said sets and being movable into and out of locking engagement with the associated coupling device of the other of said sets; power driving means; and means connecting said driving means and the latch means of all of the coupling devices of said one of said sets for moving all of said latch means simultaneously into and out of said locking engagement, the coupling devices of one of said first or second groups registering in a vertical plane and the coupling drives of the other of said groups registering in a horizontal plane.

4,322,109

MODULAR CONTOURED FURNITURE

Sacha Thebaud, P.O. Box 446, Port-au-Prince, Haiti

Continuation of Ser. No. 889,936, Mar. 27, 1978, abandoned.
This application Nov. 19, 1979, Ser. No. 95,461
Int. Cl.³ A47C 4/00
U.S. Cl. 297—25 10 Claims

1. A modular furniture construction comprising a first group of similar spaced apart parallel slat members of substantially equal length and of a first predetermined curved side profile, a second group of similar spaced apart parallel slat members of substantially equal length and of a second predetermined curved side profile, said second group of slat members being interlaced with said first group of slat members and being hingedly interconnected therewith where they interlace, means rigidly interconnecting said slat members in spaced relationship at each end thereof, and at least one tension bar member rigidly holding said first group and said second group of slat members in a predetermined relative angular disposition relative to the area of interlacing, said tension bar member being attached at each end to said means interconnecting said slat members in spaced relationship, wherein said first and second groups of slat members are interlaced intermediate the ends of each group, said means interconnecting said slat members at each end thereof comprises a rod passing through aligned apertures disposed proximate the end of said slat members, annular spacers disposed between consecutive adjacent slat members in each group for maintaining said consecutive adjacent slat members spaced apart at a substantially constant

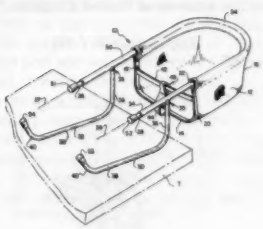
distance from each other which is at least equal to the width of said slat members, said rod passing through said annular spacers, and means at the end of said rod for anchoring together said rod, said annular spacers and said slat members, and wherein the opposite ends of the slat members of each of said groups define multiple legs for directly supporting said modular furniture structure.

4,322,110

INFANT SEAT FOR TABLES

Mark T. Simmons, 493 Sego Lilly La., Providence, Utah 84332, and Darrell G. Simmons, 181 S. 420 East, Smithfield, Utah 84335

Filed Mar. 28, 1980, Ser. No. 134,964
Int. Cl.³ A47B 83/02
U.S. Cl. 297—174 7 Claims



1. A portable folding baby seat for cantilevered mounting on the edge of a table when in a position of use and for folding into a single plane when in a position of storage, said portable folding baby seat comprising:

a flexible seat portion hung from a frame, said flexible seat portion having a generally horizontal bottom and a generally vertical back and sides when said baby seat is in said position of use, and said flexible seat portion being collapsable into a single plane when said baby seat is in said position of storage;

said frame comprising:

a generally U-shaped member from which said flexible seat portion hangs, said U-shaped member lying in a first plane, said U-shaped member including end portions extending forwardly from the top of each side of said flexible seat portion for engagement with the top of said table, and

a pair of lower support arms for engagement with the underside of said table at points that are forward from the most forward points at which said end portions of the U-shaped member engage with the top of said table, each of said lower support arms including:

an upper sleeve telescopingly mounted on a respective end portion of said U-shaped member for rotation about the axis of said member, and

a curved member having:

a downwardly extending arm portion having one end connected to said sleeve and having a length less than one-half of the distance between said sleeves, said downwardly extending arm portion extending in a direction away from said axis of rotation of said sleeve,

a forwardly extending arm portion connected to said downwardly extending arm portion, and

an upwardly extending end portion connected to said forwardly extending arm portion, said upwardly extending arm portion extending in a direction towards said axis of rotation of said sleeve;

whereby said downwardly and forwardly extending arm portions and said upwardly extending end portion of each lower support arm lie in a second plane that is rotated so as to be generally perpendicular to the plane of said U-shaped member when said baby seat is in its position of use, and further whereby said second plane is rotated so as to lie in said first plane when said baby seat is in its position of storage, and stops, made from a resilient material such as rubber, detachably secured to the end portions of said U-shaped member preventing the sleeves which are telescopingly mounted for rotation about said end portions from being removed therefrom, and allowing disassembly of the lower support arms from the U-shaped member as well as removal of the flexible seat portion when detached.

4,322,111

VEHICLE SEATS

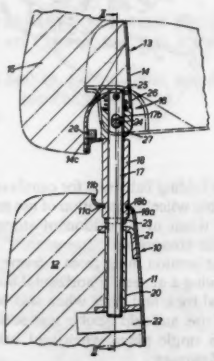
Geoffrey W. Barley, Kislingbury, and David Moorhouse, Blackthorn, both of England, assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 22, 1979, Ser. No. 86,989

Claims priority, application United Kingdom, Nov. 18, 1978, 45173/78

Int. Cl.³ A47C *1/00*

U.S. Cl. 297—357 **1 Claim**



1. A seat for a tractor or other vehicle, the seat having a backrest, a shoulder support and a hinge assembly including two laterally spaced hinge devices having a common hinge axis for mounting the shoulder support on the backrest for tilting movement from a normal position in which it forms an upward extension of the backrest to a backwardly-tilted position in which it forms a rest suitable, for example, for supporting an arm and shoulder of the seat occupant when reversing or plowing, each hinge device including a curved member integrally carried by said backrest and shoulder support for pivotal movement about said common hinge axis, said curved member having a detent aperture near one end which is adapted to receive the tip of said shank for securing the shoulder support in its normal position, said curved surface and aperture being mounted for vertical movement out of contact with the tip of said shank when said shoulder support is to be pivotally moved to its substantially horizontal position, and stop means at the other end of said curved surface for contacting the edge of the top of said shank member and limiting the pivotal movement of said shoulder support, each hinge device also including a pillar having a shank, a sleeve rotatable on the shank, means restricting movement of the sleeve longitudinally of the pillar, and a coupling carried by said sleeve and movable into locking engagement with the backrest in response to rotation of said sleeve, each hinge device further including locking means for locking the hinge device when the shoulder support is in a normal upright position, said locking means being releasable to permit the shoulder support to be tilted rearwardly about a common axis of said hinge devices to a substantially horizontal position in which it is supported by the hinge assembly, said locking means including a detent biased by a spring towards a locked position in which it secures a part of the shoulder support rigidly with respect to the backrest, but which is releasable by manually lifting the shoulder support away from the backrest against the force of the spring.

4,322,112

ADJUSTABLE HINGE MOUNT FOR A MOTOR VEHICLE SEAT

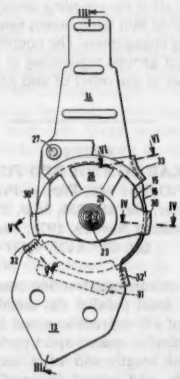
Klaus Berghaus, Wuppertal; Gerhard Lehmann, Remscheid; Hans-Joachim Berghof, Remscheid, and Hans-Jürgen Honecker, Remscheid, all of Fed. Rep. of Germany, assignors to Keiper Automobiltechnik GmbH & Co. KG, Remscheid, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 64,392

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1978, 2834529

Int. Cl.³ A47C *1/025*

U.S. Cl. 297—362 **4 Claims**



1. A hinge mount for a seat having an adjustable seat back, particularly for a motor vehicle seat, the mount including a first hinge member connected to the seat and a second hinge member connected to the seat back, a wobble gear assembly having an inner gear and an outer gear and including a rotary axle interconnecting the two hinge members and having an eccentric portion supported for rotation on one of said hinge members and a concentric portion supporting the other hinge

member to adjust via the gears of said assembly the mutual positions of said hinge members, said first hinge member being formed with a recessed circular part constituting the outer gear of said assembly, and said second hinge member being formed with a recessed circular part constituting the inner gear of said assembly, a combination comprising means for holding said hinge members on said axle in a fixed axial position alotted to each other, said holding means including a single bearing shield supported for rotation on said concentric portion of said axle and adjoining substantially without play a surface of said first hinge member, at least one rim portion of said shield being secured to said second hinge member above said recessed circular part thereof, and two diametrically opposed angular arms formed on the periphery of said shield, said arms being arranged on the level of said axle and being secured to the periphery of the recessed circular part of said second hinge member.

4,322,113

EXCAVATING MACHINES FOR EXCAVATING ROCK AND MINERALS HAVING FIRST AND SECOND ALTERNATIVE MODES OF CONTROL

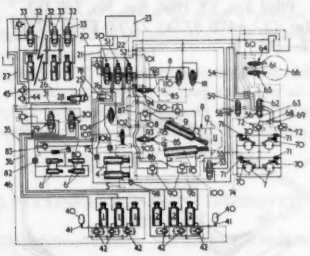
Timothy P. Taylor, Melbourne; Joseph Dowell, and Francis A. Haskew, both of Burton-on-Trent, all of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Apr. 3, 1980, Ser. No. 137,011

Claims priority, application United Kingdom, Jun. 22, 1979, 21819/79

Int. Cl.³ E21C *27/24;* E21D *9/08*

U.S. Cl. 299—1 **11 Claims**



1. An excavating machine for excavating rock and minerals from a working face, comprising a carriage including a boom support, a cutter-carrying boom movably supported by said boom support, means for moving the boom relative to the carriage, drive means for the machine, and sensing control means for controlling movement of the boom relative to said carriage, said sensing control means sensing a parameter substantially proportional to a reaction cutting force on said cutter, and providing control over said movement in two alternatives modes of control comprising a rate mode control for controlling the machine in accordance with a preselected rate of output of the drive means, and a load mode control in which movement of the boom is controlled to maintain the reaction cutting force exerted by the cutter substantially at or below a preselected value.

4,322,114

HYDRAULIC PRESSURE CONTROL DEVICE FOR DOUBLE HYDRAULIC PIPING FOR VEHICLE BRAKES

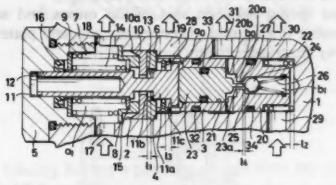
Toshifumi Maehara, Hanazono, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Jan. 2, 1980, Ser. No. 109,116

Claims priority, application Japan, Jan. 12, 1979, 54-2813; Apr. 17, 1979, 54-46838

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—6 C **9 Claims**



1. A hydraulic pressure control device arranged to be connected with first and second hydraulic pressure channels for acting on a rear wheel brake device of a vehicle, comprising a valve body, a first valve mechanism within said valve body and including a control spring, a first valve seat and a control piston arranged to receive hydraulic pressure of the first hydraulic pressure channel and to move in response thereto against the force of said control spring to control and lower the output hydraulic pressure of the first hydraulic pressure channel by thus coming into contact with said first valve seat; a balance piston in said valve body, a first output chamber within said valve body at one end of said balance piston, a second output chamber within said valve body at the other end of said balance piston, said first output chamber arranged to receive the pressure of the first hydraulic pressure channel, said second output chamber arranged to receive the pressure of the second hydraulic pressure channel, said balance piston arranged to receive the pressure of the first and second output chambers of first and second hydraulic pressure channels at the opposite ends thereof; said valve body having an input port and an output port for connection to the second hydraulic pressure channel and a second valve mechanism in said valve body, which, in response to the movement of said balance piston toward said first output chamber, cuts off communication between the input port and output port of the second hydraulic pressure channel, wherein the improvement comprises that said valve body forms a cylinder, a cylindrical fail-safe piston arranged to slidably engage said cylinder within said valve body; said fail-safe piston being provided with a second valve seat; and a closing member connected to said balance piston and engageable with the second valve seat in response to the movement of said balance piston toward said first output chamber.

4,322,115

DECELERATION-SENSITIVE, LOAD-RESPONSIVE BRAKE PRESSURE CONTROL DEVICE

Masato Yoshino, 1, Aza-miyahigashi, Koya, Itami-shi, Hyogo-ken, Japan

Filed May 19, 1980, Ser. No. 150,985

Int. Cl.³ B60T *8/14*

U.S. Cl. 303—6 C **3 Claims**

1. A deceleration-sensitive, load-responsive brake pressure control device for a vehicle comprising;

a brake pressure control valve comprising a valve seat and a plunger;

a sealing chamber;

an inertia body chamber having a passage means therefrom into said sealing chamber;

a piston means controlled by the pressure in said sealing chamber and movable toward said plunger for actuating

said plunger in response to the pressure in said sealing chamber;

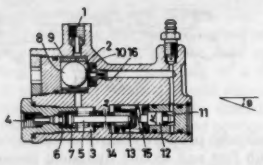
an inertia body movable in said inertia body chamber in response to the deceleration of the vehicle for closing said passage means to said sealing chamber;

a first spring engaging said plunger for urging said plunger in the valve opening direction;

a plate member disposed between said plunger and said piston means and normally spaced from said plunger;

a second spring engaging said plate member for urging said plate member away from said plunger;

a third spring between said piston means and said plate member urging said piston means and said plate member away from each other;



said second spring having a larger spring constant than said first spring and a smaller spring constant than said third spring and said second spring being arranged outside of said third spring and having a larger coil diameter than said third spring, and restricted flow orifice means for retarding the pressure build-up in said sealing chamber;

whereby, as the pressure in said sealing chamber increases, said piston means compresses said second spring through said third spring until said plate member abuts the plunger and then compresses said third spring until the piston means abuts the plate member which has already abutted the plunger so that the piston means urges the plunger directly in the valve opening direction.

4,322,116

HYDRODYNAMIC BEARING

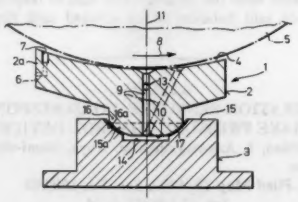
Otto Heinemann, Ennigerloh; Helmut Lucke, Beckum; Werner Schobler, Ahlen; Burkhard Heiringhoff, Oelde, and Helmut Krumme, Wadersloh, all of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Fed. Rep. of Germany

Filed Jul. 23, 1980, Ser. No. 171,471

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1979, 2931383

Int. Cl.³ F16C *32/06*

U.S. Cl. 308—9 **11 Claims**



1. Hydrodynamic bearing apparatus for supporting a rotary member, said apparatus comprising a bearing shoe having a first part tiltably and rotatably supporting a second part adapted to confront said rotary member with a bearing gap between said member and said second part; starting aid means for delivering fluid to said bearing gap to generate hydrostatic pressure in said bearing gap; means for sensing hydrodynamic pressure in said bearing gap; and means coupling said sensing means and said starting aid means and responsive to changes in the hydrodynamic pressure in said bearing gap for switching such starting aid means on and off.

4,322,117

THRUST BEARING

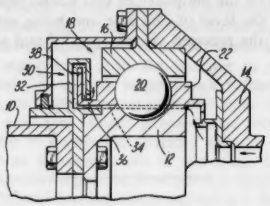
Jack Briggs, Belper, England, assignor to Rolls-Royce Limited, London, England

Filed Oct. 10, 1980, Ser. No. 196,115

Claims priority, application United Kingdom, Nov. 17, 1979, 39868/79

Int. Cl.³ F16C *19/10*

U.S. Cl. 308—233 **6 Claims**



1. A thrust bearing suitable for supporting a pair of relatively rotatable shafts, comprising an inner race adapted for fixing to a first, rotatable shaft, an outer race adapted for fixing to a further, rotatable shaft, a cage containing a plurality of balls between said races and an annular fluid reservoir adapted for co-rotation with one of said races and wherein said cage has an annular extension which rotates within said reservoir and which, on contact with fluid therein, has a braking torque imparted thereto through friction, which reduces the speed of rotation of said cage and balls relative to the speed of said races.

4,322,118

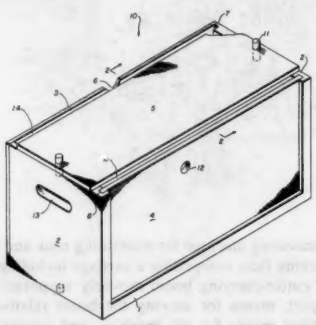
STACKABLE BOX BOOK SHELVES

Edward S. Shugart, 247 Los Felis, Stockton, Calif. 95210

Filed Jun. 17, 1980, Ser. No. 160,313

Int. Cl.³ A47B *87/00, 77/18;* F16B *12/00*

U.S. Cl. 312—111 **8 Claims**



1. A container suitable for storing books and the like comprising, in combination:

a six walled container including a front wall slideably disposed on said container,

a back wall,

and storage means for holding said front wall adjacent said back wall when contents within said container are to be displayed including a first groove inwardly provided on bottom and end walls of said container adjacent to said

back wall and an open slot substantially the thickness of said front wall between said back wall and a top wall, whereby said front wall can be slideably positioned therein.

4,322,119

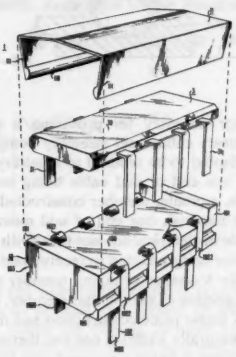
CIRCUIT MODULE MOUNTING ASSEMBLY

Paul A. Baker, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 5, 1980, Ser. No. 127,508

Int. Cl.³ H01R *13/54*

U.S. Cl. 339—17 CF **10 Claims**



1. Apparatus for mounting a module (3) having terminals (31) on a circuit board (40), said apparatus comprising

an assembly (1) for holding the module and interconnecting the terminals thereof with the circuit board

characterized in that

said assembly comprises

an insulating base member (10) mounting electrical conducting members (102) each having one portion (1020) for engaging the circuit board and another portion (1021) configured to extend in a U-shaped configuration over the base member top surface to form a surface (1022) for contacting a module terminal in a plane parallel to an edge of said base member, and

housing means (11) for spring clamping the module onto said base member and for maintaining each module terminal in electrical engagement with said contacting surface of a corresponding one of said electrical conducting members.

4,322,120

PLUG-IN CONNECTOR WITH IMPROVED SPRING CONTACT

Hans Rilling, Schoenbrunner Str. 22, 8300 Landshut, Fed. Rep. of Germany

Filed May 19, 1980, Ser. No. 151,265

Int. Cl.³ H01R *25/00*

U.S. Cl. 339—47 R **7 Claims**

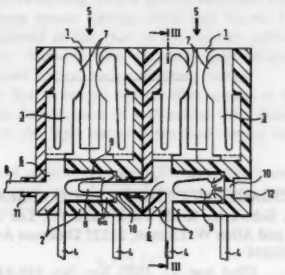
1. A plug-in connector for use with printed circuit boards comprising:

a housing consisting of insulating material;

a plurality of first contact springs opposed in said housing for receiving and making electrical connection with a circuit board, and each having a rear connector pin disposed at a rear panel of said housing for electrical connection to external circuitry;

a plurality of pairs of second contact springs respectively carried on at least some of said first contact springs and disposed generally perpendicular thereto; and

a plurality of lateral connector pins respectively disposed opposite each of said second contact spring pairs, said lateral connector pins extending out of a side of said housing,



said housing having a plurality of apertures for receiving lateral connector pins of an adjacent plug-in connector for insertion between and electrical connection with said second contact spring pairs.

4,322,121

SCREW-COUPLED ELECTRICAL CONNECTORS

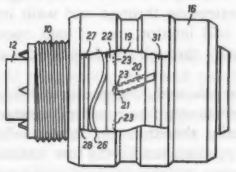
Arthur J. Riches, Herne Bay, and Robert D. Wallace, Swalecliffe, both of England, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 1, 1980, Ser. No. 117,890

Claims priority, application United Kingdom, Feb. 6, 1979, 04066/79

Int. Cl.³ H01R *13/639*

U.S. Cl. 339—89 M **11 Claims**



1. A first connector part for connecting with a mating connector part to form a two-part, rotatably-coupled electrical connector, said first connector part comprising: a coupling sleeve mounted coaxially and rotatably thereon to enable a mating, complementary connector part to be drawn towards said first connector part by complementary engaging means between the coupling sleeve and the complementary connector part; first and second annular elements arranged coaxially with said first part and immediately axially adjacent to one another, said first annular element having a set of circumferentially spaced thrust-member-receiving regions, said second annular element including a plurality of thrust-members supported in a set of thrust-member-supporting regions in said second annular element, one of said annular elements being arranged to rotate relative to the first part together with the coupling sleeve, and the other annular element being constrained against rotation relative to the first part; resilient means for urging the thrust-members and said first annular element towards one another and to cause sequential engagement of said thrust-member-receiving regions by said thrust-members when the two connector parts approach the fully-mated condition; wherein each of the regions in the set of thrust-member-supporting regions is asymmetrical about any plane containing the axis of said first connector part and extending radially through that region, the asymmetry being such that the engagement between thrust-members and thrust-

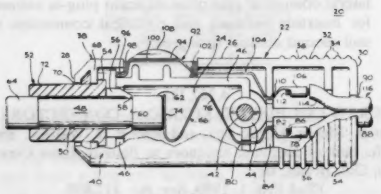
member-receiving regions provides more resistance to rotation of said coupling sleeve in the uncoupling direction than in the coupling direction.

4,322,122

CIGARETTE LIGHTER PLUG ASSEMBLY

Edwin L. Schwartz, 16604 Park Lane Pl., Los Angeles, Calif. 90049, and Allan W. Langan, 11221 Dalerose Ave., Inglewood, Calif. 90304

Filed Apr. 11, 1980, Ser. No. 139,418
Int. Cl.³ H01R *13/66, 3/00*
U.S. Cl. 339—147 P **2 Claims**



1. An improved cigarette lighter plug assembly, said assembly comprising in combination:

a longitudinally extending plug body having sidewalls and end wall defining a hollow interior and a plurality of openings extending through said walls into communication with said interior, one of said openings extending longitudinally through the front end wall of said plug body;

a fuse retainer releasably disposed in said front opening, said fuse retainer having fuse-receiving passageway extending longitudinally therethrough, substantially coaxial with said front opening and having fuse retaining means;

said fuse retainer including a plurality of interlocking means thereon adapted to coact with mating interlocking means disposed on said plug assembly;

said fuse retaining means comprising a plurality of flexible fingers extending rearwardly from said fuse retainer and adapted to releasably retain a metallic fuse;

a metallic fuse comprising a tubular member enclosing a resistance element with a front end cap and a rear end cap disposed about said tubular member, said caps having an outside diameter greater than the outside diameter of the tubular member, said fuse being releasably disposed longitudinally in said passageway, with the front thereof extending forward of said body and said retainer, said metallic fuse being moveably retained within said passageway by said plurality of fingers, each of which contact said tubular member and thereby prevent movement of said rear end cap forwardly through said passageway;

first contact means in said plug body interior contacting said rear end cap and biasing said fuse forward against said fingers;

second contact means in said plug body interior isolated from said first contact means and extending laterally of said plug body for contact with the sidewall of a cigarette lighter receptacle; and

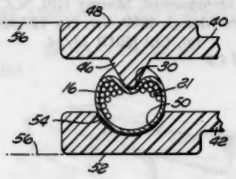
electrical conduits separately connected to said first and second contact means and extending rearwardly of said plug body.

4,322,123

CRIMPING TOOL AND ELECTRICAL CONNECTOR ASSEMBLY

Carl W. Newell, 6735 San Fernando, Glendale, Calif. 91201

Filed Oct. 9, 1979, Ser. No. 82,952
Int. Cl.³ H01R *4/10*
U.S. Cl. 339—276 R **6 Claims**



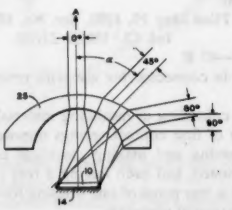
1. A connector assembly for providing a non-corrosive coupler for a battery cable, said assembly comprising a coupling member adapted to be secured to a battery terminal, an electrical cable, one end of said cable being secured to said coupling member, a tubular member constructed of an electrically conductive material, one end of said member being secured to said cable in electrical contact therewith and the other end of said member being adapted to receive said battery cable and a substantially V-shaped crimping member adapted to be disposed about a portion of said tubular member, said crimping member being of single piece construction and defining a pair of arm portions integrally joined at one end thereof, one side of one said arm portions defining a recessed area therein adapted to receive a portion of said tubular member, one side of the other of said arm portions defining a tooth member projecting toward said recessed area and the other side of both of said arm portions defining substantially flat outwardly disposed engagement surfaces, said surfaces being adapted for gripping contact with a conventional squeezing tool for forcing said tooth member toward said recessed area such that upon disposing said battery cable within said other end of said tubular member and said crimping member about said portion of said tubular member and urging said engagement surfaces defined by said crimping member together, said tubular member is crimped into said battery cable thereby structurally and electrically securing said connector assembly to said battery cable.

4,322,124

LOW COST WIDE FIELD OF VIEW INFRARED SENSOR

Howard R. Padgitt, Park Ridge, Ill., and Frank J. Ferrin, Plymouth, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 5, 1980, Ser. No. 146,803
Int. Cl.³ G02B *13/06*
U.S. Cl. 350—1.4 **8 Claims**



1. A wide field of view infrared sensor comprising:

an infrared detector mounted on a support member;

a single element infrared transmitting negative meniscus lens mounted relative to said infrared detector, such that radia-

tion impinging on said lens from a wide angle of sources is directed to said infrared detector, the surface of said lens nearest said infrared detector having a radius of curvature which is shorter than the radius of curvature of the lens surface furthest away from said infrared detector; and

an antireflective coating applied to each of the two lens surfaces.

4,322,125

INFRA-RED FILTER

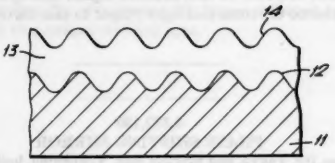
Stanley W. Warren, Old Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 13, 1979, Ser. No. 66,198

Claims priority, application United Kingdom, May 11, 1978, 19029/78

Int. Cl.³ G02B 5/28

U.S. Cl. 350—1.6 **1 Claim**



1. An infra-red transmitting element, comprising a transparent substrate on at least one surface of which a coating is provided, in which the coating includes particles of a hard transparent diamond material and in which at least one of the surfaces of the coating have an undulating profile arrangement such that surface reflections are substantially eliminated.

4,322,126

MECHANICAL OPTICAL SWITCHING DEVICES

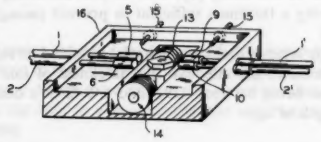
Junichiro Minowa, Yokosuka; Yohji Fujii, Yokohama; Tsutomu Aoyama, and Kikuo Doi, both of Tokyo, all of Japan, assignors to Nippon Electric Co., Ltd. and Nippon Telegraph & Telephone Public Corp., both of Tokyo, Japan

Filed Jan. 30, 1980, Ser. No. 116,774

Claims priority, application Japan, Feb. 8, 1979, 54/13569

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.20 **17 Claims**



1. A mechanical optical switching device comprising:

a. first and second input optical fiber means coupled to an input side of the device for transmitting incoming light beam signals into said switching device;

b. input collimating lens means having first and second collimating lenses for converting the incoming light beams into parallel light beams;

c. optical path-switching means having a uniform refractive index and being disposed at the rear of said input lens means, said optical path-switching means having spaced parallel upper and lower surfaces with two input sides and two output sides which are substantially perpendicular to and located between the spaced parallel surfaces, each of said input and output sides being set at a predetermined angle with respect to one of the parallel light beams for refracting one of the parallel light beams received from said input lens means for switching the optical paths of one of the parallel light beams passing through said input lens means, the light beams normally following parallel paths through said switching means and crossing over within the switching means during switched conditions;

d. output lens means having third and fourth lenses and being disposed at the rear of the optical path-switching means for focusing the parallel light beams passing through said optical path-switching means;

e. third and fourth output optical fiber means at the output side of the device, each of said output fiber means receiving one of the light beams from said output lens means; and

f. mechanical switching means for selectively inserting or removing said optical path-switching means into or away from a predetermined position.

4,322,127

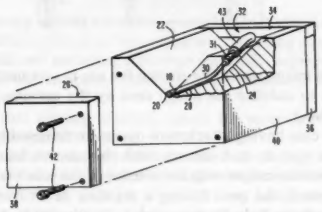
SELF-ALIGNED PLUG CONNECTOR FOR OPTICAL FIBERS

Liam D. Comerford, Croton-on-Hudson; John S. Harper, Carmel, and Eric G. Lean, Chappaqua, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,776

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.21 **12 Claims**



1. An optical fiber plug connector, comprising:

a first molded plug having first and second flat exterior surfaces defining an angle therebetween and having a third flat exterior surface perpendicular to said first and second surfaces, said first plug being molded onto a first optical fiber end, said first fiber end having an end surface and a side surface adjacent thereto, said side surface of said first fiber end being tangent with said first and second surfaces of said first plug and said end surface of said first fiber end coinciding with said third surface of said first plug;

a second molded plug having first and second flat exterior surfaces oriented with respect to each other at said defined angle and having a third flat exterior surface perpendicular to said first and second surfaces of said second plug, said second plug being molded onto a second optical fiber end, said second fiber end having an end surface and a side surface adjacent thereto, said side surface of said second fiber end being tangent with said first and second surfaces of said second plug and said end surface of said second fiber end coinciding with said third surface of said second plug; and

an alignment frame having first and second flat alignment surfaces oriented with respect to each other at said defined angle, such that said first alignment surface may broadly contact said first surfaces of said first and second plugs to thereby bring said first surfaces into coplanarity while at the same time said second alignment surface broadly contacts said second surfaces of said first and second plugs to thereby bring said second surfaces also simultaneously into coplanarity, said first and second plugs being slidable toward each other until said third surfaces of said first and second plugs also simultaneously broadly contact each other, said end surfaces of said first and second optical fiber ends being thereby butt aligned with each other.

4,322,128

CONTROL DEVICE FOR OPTICAL APPARATUS

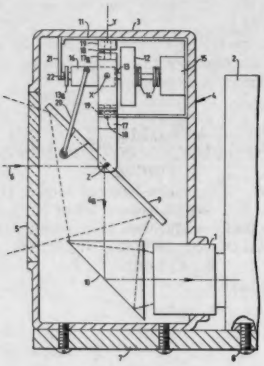
David G. Brake, Stevenage, England, assignor to British Aerospace, Weybridge, England

Filed Nov. 20, 1979, Ser. No. 96,150

Claims priority, application United Kingdom, Nov. 23, 1978, 45764/78

Int. Cl.³ G02B *17/00*

U.S. Cl. 350—16 5 Claims



1. An image stabilising device for use in conjunction with a camera to stabilise the image seen by the camera, the device comprising:

(i) A case having attachment means for removably attaching the case to said camera with the camera lens in optical communication with the interior of the case via a rear wall thereof, the case having a window in its front wall for receiving light from a scene to be viewed by the camera,

(ii) a reflecting surface mounted inside said case for turning movement about two perpendicular axes and for receiving said light via said window and reflecting it,

(iii) a motor driven gyroscope rotor mounted for rotation about an axis parallel to a line of sight of the device and coupled to said reflecting surface to control the turning movements thereof to maintain said reflected light stationary with respect to said case in the face of vibration and tremor of the camera,

(iv) a prism mounted inside said case for receiving said reflected light and for further reflecting it into said camera lens, and

(v) steering means for applying a force to said gyroscope rotor to cause it to follow an intended change in the direction of said line of sight.

4,322,129

ILLUMINATING LIGHT CONTROL DEVICE FOR ENDOSCOPE

Nagashige Takahashi, Tokyo; Shinichi Harada, Urawa, and Eiji Yamamori, Tokyo, all of Japan, assignors to Kabushiki Kaisha Medos Kenkyusho, Tokyo, Japan

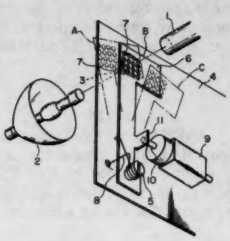
Filed Feb. 27, 1980, Ser. No. 125,052

Claims priority, application Japan, Mar. 1, 1979, 54/26408[U]; Mar. 1, 1979, 54/26409[U]

Int. Cl.³ G05D *25/02*

U.S. Cl. 350—269 14 Claims

10. A method for providing a wide range of light output intensity comprising the steps of: providing a light source having a light output variable between minimum and maximum limits; producing a decision signal when said light output is at said minimum limit, disposing light intensity reducing means in a light path between said light source and utilization



means in response to said decision signal, and operating said light source to return said light output to said maximum limit.

4,322,130

PHASE SHIFTING MIRROR

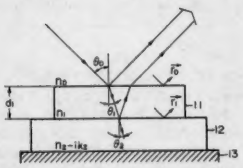
Susumu Ito, Tokyo, and Mikichi Ban, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Sep. 26, 1979, Ser. No. 79,086

Claims priority, application Japan, Sep. 29, 1978, 53-120488

Int. Cl.³ G02B *5/08*

U.S. Cl. 350—288 8 Claims



1. A phase shifting mirror comprising:

a substrate;

a layer of aluminum provided on said substrate, said layer having a thickness sufficient to prevent passage of light; and

a single layer of dielectric material provided on said layer of aluminum, the effective film thickness of said dielectric layer being between 1/9.9 and 1/6.42 of a design wavelength of light.

4,322,131

IMAGE TRANSFER DEVICE USING MIRROR MOVING ON SPHERICAL FOCAL SURFACE

William H. Newell, Mount Vernon, N.Y., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Nov. 1, 1979, Ser. No. 90,236

Int. Cl.³ G02B *7/18*

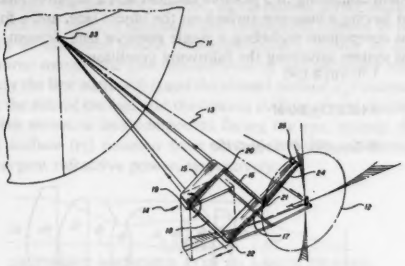
U.S. Cl. 350—289 13 Claims

1. An apparatus for transferring a portion of an image seen by a telescope having an exit pupil and a spherical focal surface whose centers lie along the principle axis of the telescope, comprising in combination;

a pick-off mirror disposed in the spherical focal surface of the telescope,

first means connected to said mirror for moving said mirror

and constraining the movement of said mirror to within the spherical focal surface,



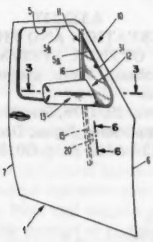
second means for transferring the image reflected by said mirror to a remote viewing area.

4,322,132

COMPOSITE VENT WINDOW AND REAR-VIEW MIRROR

George A. Derr, 197 Buckshire Dr., Holland, Pa. 18966

Filed May 9, 1980, Ser. No. 148,418
Int. Cl.[3] G02B *7/18;* B60J *1/20*
U.S. Cl. 350—307 10 Claims



1. For a motor vehicle door formed with an opening extending from front to rear across the upper part thereof, a composite window and rear view mirror unit to be installed on and secured to the door as a single entity, the unit comprising:

frame means;

window means;

support means supporting said window means on said frame means;

a rear view mirror;

mounting means mounting said rear view mirror on said frame means to extend outwardly therefrom; and

said frame means, window means, support means, rear view mirror and mounting means forming a composite unit to be installed as a single entity on said door and secured thereto by that:

(a) said frame means, window means, support means, rear view mirror, and mounting means are respectively dimensioned to provide for said frame means to be inserted and positioned in said opening wherein the frame means engages portions of the door; and

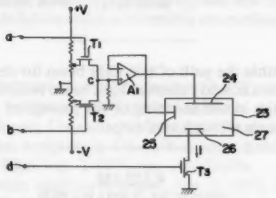
(b) said frame means includes mechanism for use in securing the frame means to said door when inserted and positioned as aforesaid.

4,322,133

METHOD OF DRIVING ELECTROCHROMIC DISPLAY DEVICE AND ELECTROCHROMIC DISPLAY DEVICE THEREFOR

Hisashi Uede, Yamatokoriyama; Kohzo Yano; Hiroshi Hamada, both of Tenri; Hiroshi Nakauchi, Nara, and Yasuhiko Inami, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 833,653, Sep. 15, 1977, abandoned. This application Dec. 11, 1979, Ser. No. 102,432
Claims priority, application Japan, Sep. 16, 1976, 51/111381
Int. Cl.[3] G02F *1/17*
U.S. Cl. 350—357 3 Claims



1. A driving circuit for driving an electrochromic display cell to conduct coloration operations and bleaching operations thereon, said cell including a counter electrode, segment electrodes, and an electrochromic substance contained therebetween, comprising:

at least two driving terminal means for receiving driving voltages applied thereto;

voltage divider means connected to said driving terminal means for developing said driving voltages and for applying said driving voltages to said driving terminal means;

switching means connected to said segment electrodes of said electrochromic display cell for presenting first and second switched states thereto corresponding, respectively, to said coloration and bleaching operations; and

control means for controlling the time for conducting said coloration and bleaching operations on said electrochromic display cell by controlling the switching of said switching means between said first and second switched states such that the quantity of electrical charge passing through said cell during said bleaching operation is greater than the quantity of electrical charge passing through said cell during said coloration operation;

said control means in said bleaching operation maintaining said switching means in said second state for a period of time sufficient to permit the resistance of said electrochromic substance to increase and preclude the passage of said electrical charge through said cell.

4,322,134

ELECTRONIC LENS

Terry M. Turpin, Ellicott City, Md., assignor to Director, National U.S. Government, Security Agency, Washington, D.C.

Filed Apr. 4, 1975, Ser. No. 565,032
Int. Cl.[3] G02F *1/29*
U.S. Cl. 350—361 8 Claims

1. An optical system, comprising:

a coherent light beam;

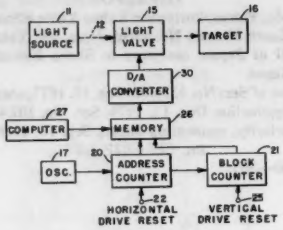
a deformable liquid target within the path of the light beam, said target including a plurality of indentifiable scan points defined by a raster format;

a means for scanning the target in said raster format, thereby modulating said light beam;

means for recording a pair of frequencies on the target, thereby creating a fringe pattern modulated by target aberrations;

a diffraction grating for heterodyning said fringe pattern;

means for detecting variations in light intensity of said heterodyned fringe pattern resulting from said aberrations; and



means within the path of said light beam for detecting phase distortion in said coherent light beam resulting from non-linearities in said scanning or the passage of said coherent light beam through said target.

4,322,135

OPTICAL APPARATUS

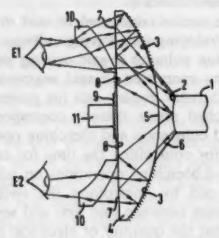
Michael H. Freeman, Denbigh, Wales, assignor to Pilkington P. E. Limited, St. Helens, England

Filed Nov. 26, 1979, Ser. No. 97,167

Claims priority, application United Kingdom, Nov. 29, 1978, 46547/78

Int. Cl.³ G02B *17/00*

U.S. Cl. 350—410 **22 Claims**



1. Optical apparatus for biocular viewing comprising a solid optical element having a face with transmissive areas arranged to receive light from an image surface at angles such that the light is internally reflected from said transmissive areas towards internally concave reflecting areas from which the light is reflected back to said transmissive areas through which it is transmitted to emerge from said face in two beams travelling towards respective spaced eye positions, and corrector lens means disposed in the light paths to the respective eye positions whereby a virtual image of at least a portion of said image surface is viewable at each of the respective spaced eye positions.

4,322,136

MICROSCOPE OBJECTIVE LENS SYSTEM

Chikara Nagano, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Hachiouji, Japan

Continuation-in-part of Ser. No. 949,254, Oct. 6, 1978, abandoned. This application Nov. 30, 1979, Ser. No. 99,003

Claims priority, application Japan, May 10, 1977, 52-124298

Int. Cl.³ G02B *21/02*

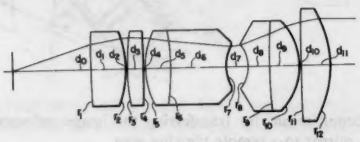
U.S. Cl. 350—414 **6 Claims**

1. A microscope objective lens system comprising a first lens component including at least two single positive lens elements, a second lens component including a meniscus cemented doublet component consisting of a positive element and a negative element and having a convex surface on the object side, a third lens component including a meniscus cemented doublet component consisting of a positive element and a negative element and having a concave surface on the object side, and a fourth lens component including a single positive lens element, said lens system satisfying the following conditions:

$$1.70 \leqq n_1 \leqq 1.90 \quad (1)$$

$$0.46f \leqq D_{II} \leqq 0.6f \quad (2)$$

$$65 \leqq \nu_{II} 100,\ 65 \leqq \nu_{III} \leqq 100 \quad (3)$$



$$0.27f \leqq |R_{II}| \leqq 0.33f,\ 0.15f \leqq |R_{III}| \leqq 0.25f \quad (4)$$

wherein the reference symbol n_1 represents the refractive index of the single positive lens element of said first lens component located nearest the object, D_{II} represents the thickness of the second lens component, ν_{II} represents Abbe's number of the positive lens of the second lens component, ν_{III} represents Abbe's number of the positive lens of the third lens component, R_{II} represents the radius of curvature of the second lens component at the image side, R_{III} represents the radius of curvature of the third lens component at the object side, and f represents an equivalent focal length of the total lens system.

4,322,137

FUNDUS OBSERVATION AND PHOTOGRAPHING OPTICAL SYSTEM

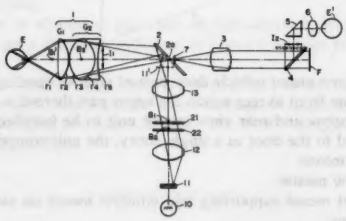
Masao Nohda, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 20, 1979, Ser. No. 105,669

Claims priority, application Japan, Dec. 29, 1978, 53-163082

Int. Cl.³ A61B *3/14*; G03B *29/00*

U.S. Cl. 351—7 **12 Claims**



1. A fundus observation and photographing optical system having an objective lens for forming a primary image of the fundus of an eye to be examined, an apertured mirror disposed rearwardly of said objective lens and obliquely with respect to the optic axis of said objective lens and having an opening on the optic axis, said mirror being substantially conjugate with the cornea of said eye with respect to said objective lens during the observation or photographing of the fundus, an illuminating optical system having a light source and a first and a second relay lens, said illuminating optical system being adapted to supply illuminating light to said eye via said apertured mirror and through said objective lens, and an image forming relay lens for forming a secondary image from the primary image of said fundus by the light passing through the opening of said

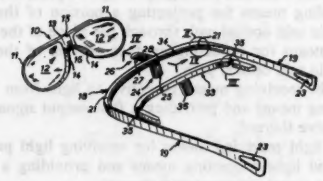
apertured mirror, the improvement residing in that said objective lens has, in succession form the side of said eye, a first group including a biconvex lens having its more curved surface facing said apertured mirror, and a second group including a doublet positive meniscus lens component convex to the eye to be examined whose cemented surface convex to said apertured mirror, the two lens surfaces of said biconvex lens, namely the first surface (r_1) and the second surface (r_2) counted from the side of the eye, and the convex surface of said doublet positive meniscus lens component facing the eye, namely the third surface (r_3) counted from the side of the eye having convergent refractive power, respectively.

4,322,138

SUPPORT MEMBER FOR GLASSES FRAME, SPECIALLY FOR USE UNDER HELMET

Francois Minart, St. Germain-en-Laye, France, assignor to Essilor International Cie Generale d'Optique, Creteil Cedex, France

Filed Feb. 21, 1980, Ser. No. 123,460
Claims priority, application France, Feb. 23, 1979, 79 04718
Int. Cl.³ G02C *3/00, 5/02*
U.S. Cl. 351—155 **15 Claims**



1. A support for an eyeglass frame front having a lug receiving aperture therein, said support having push-button assembly means in one piece molded construction with the support for mounting the eyeglass frame front on said support, said push-button assembly means comprising a support plate and a retaining tab, hinge means for hingedly mounting the retaining tab on said support plate for movement between a raised inoperative position and a lowered operative position, said retaining tab being spaced away from said support plate in said raised position and substantially parallel to said support plate in said lowered position, a selected one of said support plate and said retaining tab having a projecting lug and the non-selected one of said support plate and retaining tab having aperture means cooperable with said projecting lug in said lowered position of said retaining tab, said projecting lug also being adapted to extend through the lug receiving aperture in the eyeglass frame whereby upon closure of said assembly means through the lug receiving aperture of the eyeglass frame front the latter is secured on said support.

4,322,139

HYDROPHILIC-GEL CONTACT LENSES ADAPTED INTO A PLANARIZED XEROGEL STATE AND METHOD FOR MAKING THE SAME

Otto Wichterle, Prague, Czechoslovakia, assignor to SPOFA, spojene podniky pro zdravotnickou vyrobu, Prague, Czechoslovakia

Filed Jun. 15, 1979, Ser. No. 48,895
Claims priority, application Czechoslovakia, Jun. 26, 1978, 4178-78; Jun. 26, 1978, 4179-78; Dec. 4, 1978, 7974-78
Int. Cl.³ B29D *11/00*; G02C *7/04*
U.S. Cl. 351—160 H **16 Claims**

12. A planarized xerogel toric hydrophilic contact lens, containing at most 8 percent by weight of a hydrophilic swelling agent, which is provided on at least one surface with an

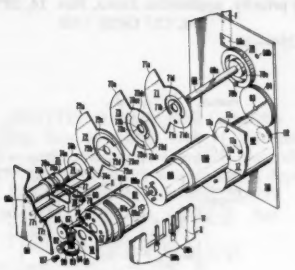
embossed drawing formed by deforming said lens in the xerogel state, which deformation is reversible on swelling said lens.

4,322,140

SHUTTER OPENING ANGLE CONTROL DEVICE FOR A MOTION PICTURE CAMERA

Hiroyuki Takimoto, Urawa, and Masamichi Toyama, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Sep. 7, 1979, Ser. No. 73,434
Claims priority, application Japan, Sep. 8, 1978, 53-111066; Sep. 8, 1978, 53-111073; Sep. 8, 1978, 53-111074; Sep. 8, 1978, 53-111075
Int. Cl.³ G03B *21/36*
U.S. Cl. 352—91 C **6 Claims**



1. A shutter system for a motion picture camera, comprising:
a shutter blade rotatable by a shutter driving motor, and having a portion for shielding a photographic optical path over an angular range during rotation thereof;
a shutter opening angle control blade including at least one blade coaxially supported with said shutter blade and having a portion for shielding the optical path over in angular range for extending the range of the shielding portion of the shutter blade, the angular range of a light shielding portion of the control blade being smaller than the angular range of the light shielding portion of the shutter blade;
driving means for driving the shutter opening angle control blade for dislocating the control blade relative to the shutter blade;
said driving means further comprising:
(a) an independent motor separate from the shutter driving motor;
(b) a cam member rotatably drivable by the independent motor; and
(c) a member coupled to the cam member for rotating the shutter opening angle control blade and shifting its rotary position relative to the shutter blade on the basis of a prescribed inter-relationship with rotation of the cam member so as to vary the angle formed by the shutter blade and the shutter opening angle control blade and vary the shielding time of the photographing optical path;

position detecting means for detecting the rotating phase of the cam member and delivering a signal when the angle formed by the shutter opening angle control blade and the shutter blade reaches a maximum and a minimum, and at a phase corresponding to a specified intermediate angle therebetween;

instruction means for instructing a change in the opening angle of the shutter blade; and

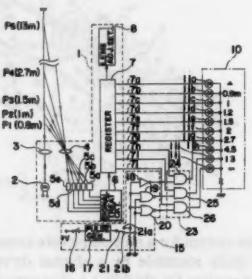
a control circuit responsive to the instruction means and the output of the position detecting means for stopping the independent motor when the opening angle of the shutter blade has reached a predetermined value.

4,322,141

DISTANCE INDICATION ARRANGEMENT FOR AUTOMATIC FOCUS CONTROL CAMERA

Shinji Tominaga, Sakai, and Motonobu Matsuda, Kawachinagano, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 14, 1980, Ser. No. 197,010
Claims priority, application Japan, Nov. 14, 1979, 54-148025
Int. Cl.³ G03B 7/08
U.S. Cl. 354—25 **6 Claims**



1. In a camera for use with an electronic flash device including an objective, a distance measuring means for producing a distance signal representative of a distance up to a target object and a lens adjusting and setting means for adjusting and setting said objective to a position corresponding to said distance signal from said distance measuring means, a distance indication device comprising:

indication means for indicating the distance up to said target object in response to said distance signal;

an electric circuit for causing said indication means to make a continuous indication in response to said distance signal when said distance signal represents a distance within a maximum flash association distance and for causing said indication means to make an intermittent indication in response to said distance signal when said distance signal represents a distance outside of the maximum flash association distance, the maximum flash association distance being determined by the guide number of said electronic flash device, the value of a fully open aperture of said objective and a set film sensitivity; and

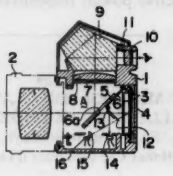
switch means for changing the range where said electric circuit causes said indication means to make the intermittent indication in association with film sensitivity setting.

4,322,142

SINGLE-LENS REFLEX CAMERA LIGHT MEASUREMENT AND EXPOSURE CONTROL APPARATUS

Kunio Kawamura, Sakai, and Hiroshi Ueda, Nara, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 23, 1981, Ser. No. 227,794
Claims priority, application Japan, Jan. 23, 1980, 55-7098
Int. Cl.³ G03B 3/10, 7/099, 7/26
U.S. Cl. 354—25 **14 Claims**



1. A single lens reflex camera, comprising:

a mirror movable between a viewing position intercepting a photographic optical path and a photographing position retracted from said photographic optical path, said mirror including means for projecting a portion of the object light in said optical path through the plane of the mirror, and means for reflecting another portion of the object light in said optical path;

first light receiving means receptive to light from said reflecting means and providing a first output signal representative thereof;

second light receiving means for receiving light projected by said light projecting means and providing a second output signal representative thereof;

third light receiving means for receiving light reflected from means located in the area of the focal plane and having at least one light reflecting surface in said photographic optical path, said third light receiving means including a first light receiving portion for receiving light reflected from a limited area of said at least one surface, and a second light receiving portion for receiving light reflected from areas of said at least one surface other than said limited area, said third light receiving means providing a third output signal representative of the light reflected from at least one of said first and second light receiving portions and a fourth signal representative of a combination of the light reflected from both said first and second light receiving portions;

means for displaying exposure information in response to said first and second output signals;

manually operable first switching means for selectively connecting said first and second light receiving means to said displaying means;

exposure control means for controlling photographic exposure in response to said third and fourth output signals; and

manually operable second switching means for selectively electrically connecting said third signal and said fourth signal to said exposure control means.

4,322,143

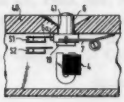
ELECTRONIC FLASH FOR A CAMERA

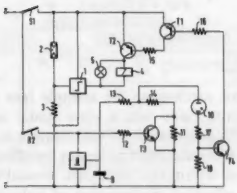
Manfred Mailänder, Röinghausen, Fed. Rep. of Germany, assignor to Balda-Werke, Bunde, Fed. Rep. of Germany

Filed Jun. 27, 1979, Ser. No. 52,414
Int. Cl.³ G03B 15/03
U.S. Cl. 354—32 **5 Claims**

1. An improved flash device for a camera comprising a two-way switching means movable between a first open circuit position and a second closed circuit position, biasing means

normally biasing said two-way switching means to said first open circuit position, means for automatically restoring said two-way switching means to its first open circuit position from its second closed circuit position, an electromagnet operatively connected to said switching means, said electromagnet being magnetically active when said two-way switching means is in said second closed circuit position, said two-way switching means and said electromagnet being cooperable for thereby forming a relay, a conventional high-voltage flasher having a charging circuit of the type including a high-voltage capacitor and operative to commence charging when said two-way switching means is moved to its said second closed circuit position, said relay being operatively connected to said charging circuit and controlling current feed to said high-voltage capacitor therein as a function of the level of charge thereof, and a charge indicating means operatively connected to said high-voltage capacitor and said electromagnet for controlling said electromagnet as a corresponding function of voltage present on said high-voltage capacitor, said charge indicating





means providing an operator of said device with a positive indication that said device is ready to flash, an armature mounted on said two-way switching means, said armature being magnetically attracted to said electromagnet when said two-way switching means is in its second closed circuit position and said electromagnet is magnetically active, said electromagnet being inactivated when said charge indicating means positively indicates that said device is ready to flash, said automatic restoring means returning said two-way switching means to its first open circuit position when said electromagnet becomes inactive, and an improved test circuit comprising, in operative connection, a two-way switch, a photoelectric cell, a trigger circuit and an electro-optic indicating means, said two-way switch of said improved test circuit being normally open and closed when said two-way switching means is moved to an intermediate position between said first and second positions thereof, said electro-optic indicating means providing an operator with a positive indication in the absence of sufficient ambient light for picture taking without a flash.

4,322,144

APERTURE STOP-DOWN CONFIRMATION DEVICE FOR CAMERA

Ryoichi Suzuki, Kawasaki, and Takashi Uchiyama, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1980, Ser. No. 164,521

Claims priority, application Japan, Jul. 5, 1979, 54-85175

Int. Cl.³ G03B *7/095, 9/02*

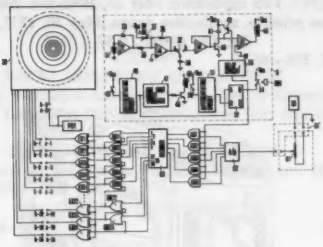
U.S. Cl. 354—43 **14 Claims**

1. A camera comprising:

(a) a diaphragm member, said member having a property for changing the light transmittance so as to form a light admitting part and the light shading part and controlling the aperture value with the area of the light admitting part;

(b) an exposure information signal forming means, said means forming the exposure information signal;

(c) a control circuit, said circuit deciding the area of the light



admitting part of the property matter in accordance with the exposure information signal;

(d) a diaphragm closing confirmation switch; and

(e) a control signal forming means, said means forming a control signal for making the control circuit operative by means of the operation of the switch.

4,322,145

SHUTTER DEVICE FOR CAMERA

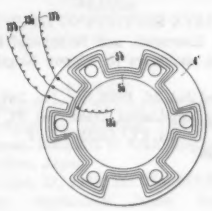
Tateo Yamada; Isao Harigaya, both of Yokohama; Yukio Ogawa, Kawasaki, and Michio Hirohata, Inagi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1980, Ser. No. 141,279

Claims priority, application 04261979, Apr. 26, 1979, 54-51745

Int. Cl.³ G03B *7/08, 9/08*

U.S. Cl. 354—50 **14 Claims**



1. A shutter device for a camera, comprising:

magnetic means for forming magnetic fields;

conductor means located to be influenced by said magnetic field so that when current is supplied to the conductor means, the relative position of the conductor means and the magnetic field is varied;

at least one shutter blade for opening and blocking a photo-taking optical path on the basis of the relative positions of said conductor means and the magnetic means;

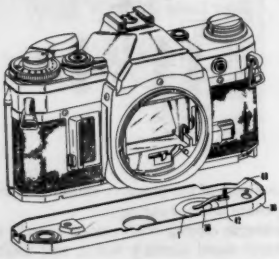
detecting means for detecting the displacement speed of the shutter blade; and

control means for controlling the displacement speed of the shutter blade by controlling the amount of current through said conductor means in response to the output of the detecting means.

4,322,146
CAMERA HAVING A SOUND-MAKING ELEMENT

Masami Shimizu, Tokyo; Masanori Uchidoi, Yokohama; Nebuaki Date, and Hiroshi Aizawa, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 907,853, May 19, 1978, Pat. No. 4,223,987. This application May 20, 1980, Ser. No. 151,698
Claims priority, application Japan, May 30, 1977, 52-63064
Int. Cl.³ G03B 7/081. 17/18
U.S. Cl. 354—60 E 28 Claims

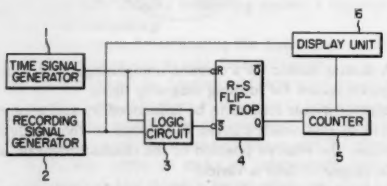


3. A camera comprising:
(a) a light sensing circuit for generating electric signals corresponding to an object brightness,
(b) an exposure value operating circuit responsive to said light sensing circuit for producing exposure information corresponding to an object brightness,
(c) low brightness signal detection means responsive to said exposure value operating circuit for producing an electric signal to indicate whether an exposure value is proper or not,
(d) pulse generation means for producing pulses,
(e) a sound-making control circuit responsive to said detection means and said pulse generation means for generating a control signal indicating inadequate brightness,
(f) a sound-making element responsive to said control circuit for producing sound signals during inadequate conditions for photography.

4,322,147
DATA RECORDING DEVICE

Ryuzo Motoori, Kawasaki, and Nobuyoshi Hagyuda, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 16, 1980, Ser. No. 169,376
Claims priority, application Japan, Jul. 31, 1979, 54-104732
Int. Cl.³ G03B 17/24
U.S. Cl. 354—106 3 Claims

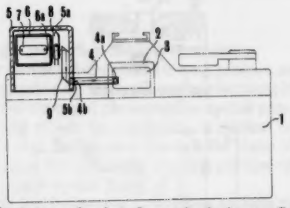


1. A data recording device for a camera, comprising:
a time signal generator for generating time-sequential time signals;
display means changing the content of its display in response to said time signal;
a recording signal generator for generating a recording signal of a determined duration for causing an exposure of the display of said display means onto a photographic film; and
a delay means delaying entry of one of said time signals into said display means until termination of said recording signal in case said time signal is released during continuation of the recording signal.

4,322,148
INFORMATION INDICATING DEVICE FOR SINGLE LENS REFLEX CAMERA WITH BUILT-IN FLASH UNIT

Ryoichi Yoshikawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1980, Ser. No. 180,937
Claims priority, application Japan, Aug. 29, 1979, 54-110120
Int. Cl.³ G03B 15/02, 15/03, 19/12, 17/20
U.S. Cl. 354—128 9 Claims

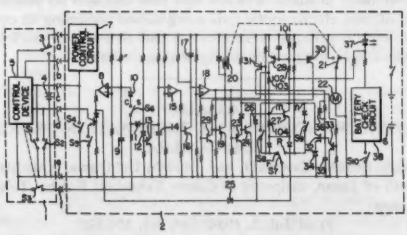


5. An indicator mechanism for a single lens reflex camera including a built-in flash unit, a view finder and means for selectively enabling operation of said camera in a flash mode comprising first light transmitting means for effecting transmission of light from within said flash unit, second light transmitting means for effecting transmission of light from said first light transmitting means to said view finder and indication means for placing said first and said second light transmitting means in light transmitting relationship with each other only when said camera is set for operation in said flash mode to provide in said view finder an indication of the operating condition of said flash unit.

4,322,149
ELECTRIC DRIVING DEVICE OF A CAMERA

Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 1, 1980, Ser. No. 117,804
Claims priority, application Japan, Aug. 15, 1979, 54/103161
Int. Cl.³ G03B 1/18
U.S. Cl. 354—173 5 Claims



1. An electric driving device of a camera for winding up a film by a motor, comprising:
(a) means for generating a wind-up signal during the time period from completion of an exposure to the time when said wind-up has been completed, said generating means

including delay means for initiating a time delay interval upon completion of said wind-up for maintaining said generating means in condition to emit said wind-up signal;

(b) means operable by reception of said wind-up signal to drive the motor for said wind-up;

(c) torque detecting means for detecting an increase in wind-up torque resulting from completion of said wind-up and emitting an output, said delay means being constituted so that the time delay interval is greater than the time period from reception by said operable means to detection by said torque detecting means; and

(d) forcible stopping means responsive to the output of said torque detecting means to stop said motor separately from the operation of said motor driving means.

4,322,150

MECHANICAL MOUNTING SYSTEM FOR ZOOM OBJECTIVE

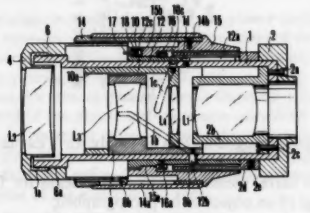
Shigeru Kamata, and Takashi Isobe, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1980, Ser. No. 173,182

Claims priority, application Japan, Jul. 30, 1979, 54-97766; Aug. 27, 1979, 54-108911

Int. Cl.³ G02B *7/10*; G03B *13/02*

U.S. Cl. 354—195 **8 Claims**



1. A zoom lens assembly having a single operational member adapted to selectively perform zooming operation and close-up operation comprising:

(a) first and second lens mounting members for holding first and second lens groups movable for zooming operation with variation of image magnification while image shift is compensated for respectively;

(b) a cylindrical member in which said first and said second lens mounting members are fitted and which has first and second guide means for guiding said first and said second lens mounting member, with third guide means being formed contiguous to said first guide means for guiding said first lens mounting member to close-up range;

(c) an intermediate member fitted between said operational member and said cylindrical member having contiguous first and second guide means formed therein to guide said operational member either axially or transversely, said first or said second guide means being penetrated by engaging means on said cylindrical member, and having third and fourth guide means cooperative with said first guide means of said cylindrical member to control movement of said first lens mounting member;

(d) interlocking means for said operational member and said first lens mounting member, and engaging means on said first lens mounting member extending through said first guide means of said cylindrical member to engage said third or said fourth guide means of said intermediate member so that as said operational member is actuated, said first lens mounting member is moved;

(e) drive connection means between said first lens mounting member and said second lens mounting member, one of said two lens mounting members being provided with axially elongated armed portions, the other of said lens mounting members having engaging portions for engagement with said armed portions so that motion of said first lens mounting member is transmitted to said second lens mounting member; and

(f) interlocking means for close-up operation arranged upon changeover of said operational member from the zooming range to the close-up range to interlock said intermediate member and said operational member with each other in transverse directions.

4,322,151

BACKLASH-FREE CAM CONTROL

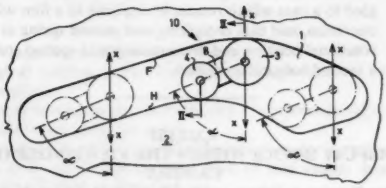
Otto Weiss, Bopfingen-Aufhausen, Fed. Rep. of Germany, assignor to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Dec. 10, 1980, Ser. No. 215,043

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952078

Int. Cl.³ G03B *13/02*; G02B *7/10*

U.S. Cl. 354—196 **7 Claims**



1. A device for the backlash-free control of movement by means of a preferably non-linear guide curve (F) against which a control part is applied, wherein

(a) the control part (10) consists of two projections (3–4) which are applied by a spring force (5), acting between two followers, in each case against one of two different guide curves (F-H), respectively; and

(b) the shape of one (F) of the two guide curves is so selected that, in combination with the first follower (3) resting thereon which is the actual control follower the desired course of movement is obtained; said device being characterized by the fact that:

(c) the shape of the second guide curve (H) is so selected that the spring (5) which applies the second, auxiliary follower (4) against it is under constant tension over the entire range of the guide curve (H).

4,322,152

ELECTROMAGNETIC RELEASE MECHANISM

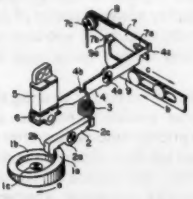
Mituo Satoh, Tsurugashima; Koji Sato, Shiki, and Toru Kando, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1981, Ser. No. 227,904

Claims priority, application Japan, Feb. 12, 1980, 55/16141[U]

Int. Cl.³ G03B *17/42*

U.S. Cl. 354—204 **5 Claims**



1. An electromagnetic release mechanism comprising:

an electromagnet having a permanent magnet and a coil

wound on a yoke, a force of attraction of said permanent magnet being reduced in response to current flowing in said coil;

a rotatable release locking member having a forked end and a cut, said cut being positioned to lock a release drive member;

a release member having a movable member at one end at a position to be attracted by said electromagnet and having the other end retained in said forked end of said release locking member;

a first spring for urging said release locking member to turn said release member to engage said movable member with said electromagnet;

a second spring having a first end connected to said release member, said second spring urging said release member to turn said release locking member in a direction to release said release drive member; and

a rotatable arm having a first end connected to a second end of said second spring and a second end operatively coupled to a cam which rotates in response to a film winding operation, said cam energizing said second spring at a first rotational position and deenergizing said second spring at a second rotational position.

4,322,153

DISPLAY DEVICE WITHIN THE VIEWFINDER OF A CAMERA

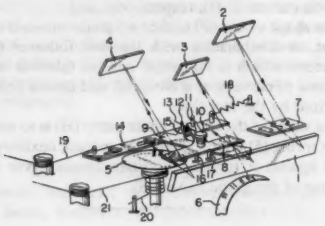
Akira Katayama, Tokyo, and Koichi Higashi, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 3, 1981, Ser. No. 231,146

Claims priority, application Japan, Feb. 14, 1980, 55/16416[U]

Int. Cl.³ G03B *13/02, 17/20*

U.S. Cl. 354—225 **5 Claims**



1. A display device within a viewfinder of a camera capable of selectively setting, by operation of a mode selector, any of an aperture priority automatic shutter speed control mode, a shutter speed priority automatic aperture control mode or a program exposure control mode in which aperture and shutter speed are automatically controlled in accordance with a predetermined program, said display device including a first display portion capable of displaying a preset aperture value, a second display portion capable of displaying a preset shutter speed, and a third display portion capable of displaying at least one of an automatically controlled aperture value and an automatically controlled shutter speed, said display device further comprising:

display clearing means for clearing the display by said second display portion in response to the selection of the aperture priority automatic shutter speed control mode by said mode selector, clearing the display by said first display portion in response to the selection of the shutter speed priority automatic aperture control mode, and clearing the displays by said first and second display portions in response to the selection of the program exposure control mode.

4,322,154

MOUNTING MECHANISM FOR THE INTERCHANGEABLE LENS ASSEMBLY OF A CAMERA

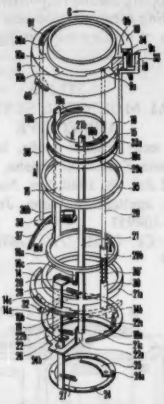
Shigeru Hashimoto, Yokohama, and Akiyasu Sumi, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1981, Ser. No. 241,139

Claims priority, application Japan, Mar. 10, 1980, 55-30072

Int. Cl.³ G03B *17/00, 7/02*

U.S. Cl. 354—286 **23 Claims**



5. An interchangeable lens assembly for a camera comprising:

(a) lens barrel means including lens means for forming an image of an object to be photographed;

(b) mounting means arranged to slide within said lens barrel means and being biased for movement in the axial direction thereof;

(c) coupling means fixed on said lens barrel means for engaging with complementary coupling means on said camera;

(d) light defining means for controlling light entering said lens means; and

(e) transmission means for transmitting exposure control signals between said lens assembly and said camera, said transmission means being movable in the direction of the optical axis of said lens assembly together with said mounting means when said lens assembly is dismounted from said camera.

4,322,155

ELECTROSTATIC DISPLAY APPARATUS

Ira Lopata, New York, N.Y., assignor to Ragen Precision Industries, Inc., North Arlington, N.J.

Continuation of Ser. No. 899,561, Apr. 24, 1978. This application Dec. 20, 1979, Ser. No. 105,944

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **2 Claims**

1. An apparatus for forming, toning and displaying the unfused visible electrostatic image on an electrostatic strip, and alternatively and selectively for erasing the electrostatic image to permit reuse of the electrostatic strip or for fusing the visible electrostatic image to make a permanent copy thereof includes,

a. source means for said electrostatic strip,

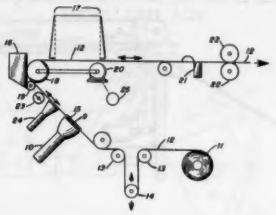
b. a generally horizontal planar surface means having a viewing station thereon disposed in spaced relation to the source means, said planar surface means having an inlet end and an outlet end for the electrostatic strip,

c. means connected to the source means to normally feed the electrostatic strip in a forward direction through a predetermined course to and across the viewing station on said planar surface means to dispose the electrostatic strip for

inspection at the viewing station and said feed means including, means for reversing the direction of movement of the electrostatic strip,

d. means between the source means and the inlet side of the planar surface means and disposed relative the electrostatic strip to form a latent electrostatic image on the electrostatic strip,

e. toning means between the latent electrostatic image forming means and the inlet side of the planar surface means to make the latent electrostatic image visible for inspection when the electrostatic strip is moved forward to the viewing station,



f. means adjacent the outlet end of the planar surface selectively operable only on forward movement of the electrostatic strip to fuse the desired visible electrostatic image to form a permanent copy thereof, and

g. a normally non-operative means disposed adjacent the inlet end of the planar surface means selectively operable when the reversing means is actuated to move the electrostatic strip in a reverse direction to neutralize and remove toner from the unfused visible electrostatic image to permit reuse of the electrostatic strip.

4,322,156

CHARGING APPARATUS FOR COPYING MACHINE

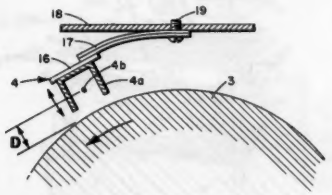
Mitsuaki Kohyama, Higashikurume, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 15, 1980, Ser. No. 169,100

Claims priority, application Japan, Aug. 14, 1979, 54-103262; Aug. 14, 1979, 54-103263; Aug. 14, 1979, 54-111761[U]

Int. Cl.³ G03G *15/00*; H01H *47/32*; H01T *19/04*

U.S. Cl. 355—3 CH **9 Claims**



1. In an electrostatic copying machine, a charging apparatus for charging a photoconductive member, wherein the charge acceptance of said photoconductive member is dependent on temperature, said charging apparatus comprising:

a corona charger spaced a predetermined distance from said photoconductive member for charging said photoconductive member; and

support means for supporting said corona charger, said support means comprising thermal means positioned near said photoconductive member and operatively connected to said corona charger for adjusting the distance between said corona charger and said photoconductive member in response to the temperature of said photoconductive member.

4,322,157

COPYING MACHINE

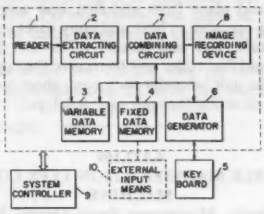
Shinji Miura, Kawasaki, and Kazuo Aramaki, Yokohama, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,455

Claims priority, application Japan, Sep. 3, 1979, 54/112528

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 C **5 Claims**



1. A copying machine which comprises:

original reading means for reading image data out of an original;

data extracting means for extracting a predetermined part of said image data thus read;

first memory means capable of rewrite data, for temporarily storing said predetermined part of said image data as variable data to be edited;

second memory means in which fixed data required for forming documents to be copied out by said copying machine have been stored in advance;

a data generator for writing additional, new data; and

a system controller for collectively controlling calling data out of said memory means and combining said data called out of said memory means and additional, new data written by said input means,

whereby image data are edited as required.

4,322,158

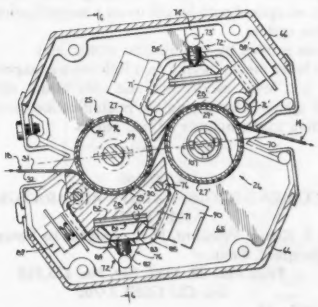
THERMAL FILM DEVELOPMENT APPARATUS

Ronald J. Frias, Milwaukee; Roger A. Gross, Hartford, and David Jagielski, Kewaskum, all of Wis., assignors to Micron Corporation, Iron Ridge, Wis.

Filed Jan. 30, 1980, Ser. No. 116,922

Int. Cl.³ G03B *27/52*; H05B *1/00*

U.S. Cl. 355—27 **22 Claims**



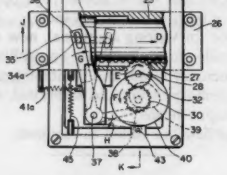
1. A thermal developer for supplying heat to a copy sheet having a thermally developable surface material for copying of the original material and said copy sheet subject to being set in a curved shaped by the development heat for said surface material, comprising a first and second roller unit, each of said units including a roller unit mounted with the axis of the roller

units in a common plane and having an entrance means and exit means to and from said roller units substantially in said common plane, a first heat source having a heat radiating surface substantially matching the curvature of said first roller unit and located to one side of said plane in nesting relationship to the first roller unit, and a second heat source having a heat radiating surface substantially matching the curvature of said second roller units and located in nesting relationship to said second roller unit, said second heat source being located to the opposite side of said plane from said first heat source, said heat sources being operable to heat said copy sheet to the developing temperature, and said second roller unit being closely mounted to said first roller unit to receive the copy sheet from said first roller unit whereby each copy sheet moves continuously in one direction through said developer.

4,322,159
VARIABLE MAGNIFICATION TYPE COPYING MACHINE

Sataro Takahashi, Matsuyama; Ryota Ogawa, Kawagoo, and Yasunori Arai, Asaka, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1980, Ser. No. 183,709
Claims priority, application Japan, Sep. 10, 1979, 54-115894
Int. Cl.³ G03B *27/34, 27/40, 27/70, 27/36*
U.S. Cl. 355—57 **5 Claims**



1. A variable magnification type copying machine capable of duplicating originals with different duplication magnification factors comprising:

an image forming optical system;

stepping electric motor means rotating an amount determined by the number of pulses applied thereto by a pulse signal;

means for moving a part of said image forming optical system in response to rotation of said stepping electric motor means to vary an optical path length to set a magnification factor of said lens system;

cam means rotated by said electric motor; and

rotatable lever means having cam followers engaged with said cams, said lever means and said cam means moving said optical system for varying the magnification factor thereof according to the number of said pulses.

4,322,160
DOCUMENT REGISTRATION APPARATUS AND METHOD

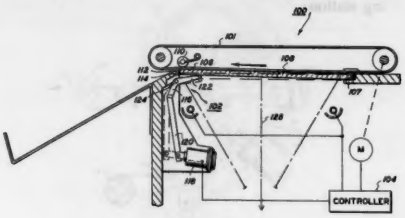
Gerhard S. Kobus, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 29, 1980, Ser. No. 125,818
Int. Cl.³ G03B *27/62*
U.S. Cl. 355—75 **22 Claims**

1. A document registration apparatus for registering a document sheet which is transported by a document transport **(10, 100, 202)** in a movement path over the transparent copying window **(12, 108, 208)** of a copier having an optical axis **(16, 126, 210)** and a fixed edge member **(30, 112, 220)** stationarily mounted to the copier characterized by:

one end **(20, 106, 216)** of said transparent window **(12, 108, 208)** being closely adjacent but movable into and out of alignment relative to said fixed edge member **(30, 112, 220)**, and

means **(18, 102, 212)** for intermittently shifting the position of said one end **(20, 106, 216)** of said transparent window which is adjacent said fixed edge member towards and away from alignment with said fixed edge member, to interpose a document sheet obstructing registration surface **(66, 114, 218)** in the movement path of the document sheet to register said document sheet relative to said transparent window when said transparent window is shifted by said means **(18, 102,**



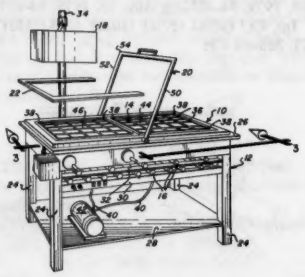
212) out of alignment with said fixed edge member and to provide an unobstructed movement path for said document over said transparent window and over said fixed edge member when said transparent window is shifted towards alignment with said fixed edge member;

said means **(18, 102, 212)** for shifting said transparent window maintaining said transparent window during copying in a stationary copying position perpendicular said optical axis of said copier and shifting said transparent window out of said copying position during a non-copying time period.

4,322,161
STRIPPER'S TABLE AND METHOD OF COMPOSITING LITHOGRAPHIC WORK PIECES

Edward L. Mohr, 4445 S. Delaware St., Englewood, Colo. 80110

Filed Mar. 3, 1980, Ser. No. 126,415
Int. Cl.³ G03B *27/20*
U.S. Cl. 355—93 **31 Claims**



1. A stripper's table for lithographic work employing a film having an emulsion side, comprising:

(a) a first table surface portion defining an open face vacuum grid adapted, in use, to carry a film in emulsion-side-up position;

(b) a second table surface portion defining a light table surface;

(c) a pivoted frame means for pivotal motion between said first and second table surface portions, wherein the frame means is adapted to carry, in use, a light permeable sheet of lithographic work piece carrier material into vacuum-completing contact with said first table surface portion for simultaneous emulsion contact with film on the first table

surface portion vacuum grid by a carried lithographic work piece.

4,322,162
METHOD AND APPARATUS FOR SENSING IN-PLANE DEFORMATION OF A SURFACE

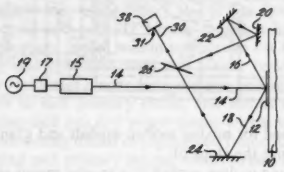
James McKelvie, and Colin A. Walker, both of Glasgow, Scotland, assignors to National Research Development Corporation, London, England

PCT No. PCT/GB78/00043, § 371 Date Jul. 25, 1979, § 102(e) Date Jul. 23, 1979, PCT Pub. No. WO79/00320, PCT Pub. Date Jun. 14, 1979

PCT Filed Nov. 24, 1978, Ser. No. 127,212

Int. Cl.³ G01L *1/24*

U.S. Cl. 356—35.5 **37 Claims**



1. A method of sensing in-plane deformation of a surface on which there is a regular periodic pattern and which is deformed when the surface is deformed comprising illuminating the deformed pattern with a single, normally incident beam of coherent electromagnetic radiation so that the radiation is reflected as one zero order beam and a plurality of diffracted beams; and combining two of said beams, whereby the beams interfere in a manner related to the deformation along the direction of the intersection of said plane of the surface with the plane in which the two interfering beams lie.

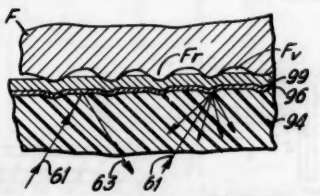
4,322,163
FINGER IDENTIFICATION

Michael Schiller, Riverdale, N.Y., assignor to Fingermatrix Inc., North White Plains, N.Y.

Continuation-in-part of Ser. No. 42,605, May 25, 1979, abandoned, and a continuation-in-part of Ser. No. 891,497, Mar. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 844,580, Oct. 25, 1977, abandoned, said Ser. No. 42,605, is a continuation-in-part of Ser. No. 844,719, Oct. 25, 1977, abandoned. This application Nov. 17, 1980, Ser. No. 207,639

Int. Cl.³ G06K *9/00, 9/20*

U.S. Cl. 356—71 **12 Claims**



1. In an optical finger image processing apparatus, the improvement comprising: a platen having a front surface adapted to receive an interrogating light beam and a back surface adapted to receive a finger thereon, said platen having a transparent substrate, a first deformable, resilient transparent layer on the back surface of said substrate, said layer having sufficient thickness and being sufficiently deformable so that forces transmitted by the ridges of a finger pressed against the back surface on said platen will readily cause said layer to deform in the zones directly under the ridges of the applied finger, and a reflective layer on the back surface of said first deformable, resilient layer, said reflective layer being sufficiently thin so that forces transmitted by the ridges of a finger pressed against the back surface of said platen will be readily transmitted to said deformable resilient layer.

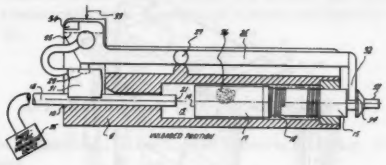
4,322,164
STERILIZABLE, DISPOSABLE OPTICAL SCATTERING REFERENCE MEDIUM AND CONTAINER ASSEMBLY

Robert F. Shaw, Portola Valley, and John M. Sperinde, San Jose, both of Calif., assignors to Oximetrix, Inc., Mountain View, Calif.

Continuation of Ser. No. 733,280, Oct. 18, 1976, abandoned. This application Jun. 25, 1979, Ser. No. 52,065

Int. Cl.³ G01J *1/02*

U.S. Cl. 356—243 **13 Claims**



1. Apparatus for providing a calibration reference for use with a light guide that cooperates with a photometric measuring device in making light intensity measurements at a number of selected wavebands, the apparatus comprising (a) a plurality of light-scattering particles substantially uniformly dispersed throughout a solid medium that has a substantially incompressible body which is sufficiently compliant at its surface for intimate physical contact with the end of the light guide; and (b) means for urging and maintaining intimate physical contact between the end of the light guide and the compliant surface.

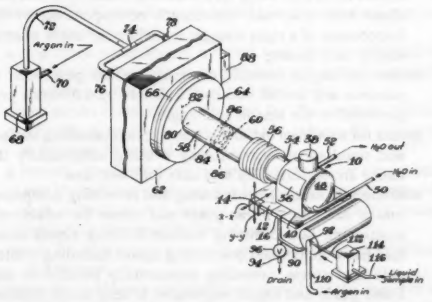
4,322,165
VUV PLASMA ATOMIC EMISSION SPECTROSCOPIC INSTRUMENT AND METHOD

Stephen R. Ellebracht, Lake Jackson, Tex., and Charles M. Fairless, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 23, 1979, Ser. No. 14,408

Int. Cl.³ G01N *21/73*

U.S. Cl. 356—316 **10 Claims**



1. Apparatus for atomic emission spectroscopic analysis which comprises a plasma chamber, vent means in the plasma chamber for venting gases therefrom by draft, open port means in the plasma chamber for admitting purging gas to the plasma chamber, means for generating a plasma within the internal zone of the plasma chamber, means for dispersing sample for

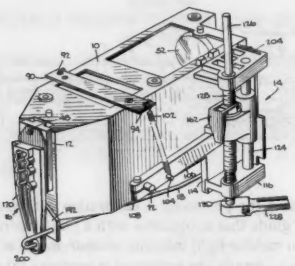
analysis in or near the internal plasma zone of the plasma chamber, a chromator, the chromator being in optical communication with the internal plasma zone of the plasma chamber and being in gaseous communication therewith through said open port means, and means to continuously admit a controlled flow of purging gas interiorly to the chromator for commonly purging the chromator and plasma chamber.

4,322,166

MONOCHROMATOR

Charles F. deMey, II, West Redding, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Feb. 12, 1979, Ser. No. 11,259
Int. Cl.³ G01J *3/18*
U.S. Cl. 356—334 **12 Claims**



1. In a monochromator including a housing defining a radiation entrance slit and a radiation exit slit, means in said housing for collimating radiation from said entrance slit, optical grating means for dispersing said collimated radiation by wavelength, and means for emitting a selected portion of said dispersed radiation from said exit slit, the improvement wherein said radiation emitting means comprises:

at least one radiation filter;

means for selectively positioning said filter in the path of radiation leaving said exit slit;

a rotatable mount supporting said optical grating; and

means for rotating said mount, said mounting rotating means comprising:

a camming arm secured to said mount for rotation therewith about an axis and having a cam follower positioned at a predetermined arm length from the axis of rotation of said mount for travel along an arc during rotation of said arm about said axis, said arm length corresponding to the hypotenuse of a right triangle including the angle of rotation of said mount;

means defining a movable camming surface positioned to advance and retract said cam follower by a distance proportional to the sine of said angle;

means for so advancing and retracting said camming surface and simultaneously translating it along substantially the entire arc traversed by said cam follower; and

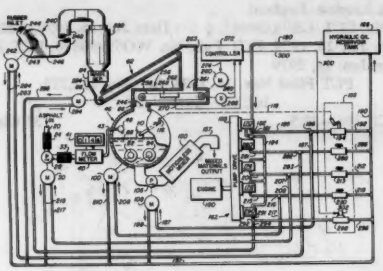
wherein said means for advancing and retracting comprises: means defining a linear guide and means for selectively positioning said camming surface defining means along said linear guide; said positioning means including a rotatable lead screw extending substantially parallel to said linear guide and means responsive to lead screw rotation to drive said camming surface defining means along said linear guide; said responsive means including a drive nut on said lead screw; gimballing means intermediate and in contact with both said drive nut and camming surface defining means and means for preventing rotation of said drive nut and gimballing means relative to said camming surface defining means.

4,322,167

METHOD FOR MAKING ASPHALT-RUBBER PAVEMENT COMPOSITIONS

Francis K. Hill, P.O. Box 2059, Wickenburg, Ariz. 85358

Filed Feb. 14, 1980, Ser. No. 121,422
Int. Cl.³ B28C *7/06, 7/12*
U.S. Cl. 366—8 **4 Claims**



1. A method for mixing molten asphalt and granulated rubber comprising the steps of:

(a) supplying molten asphalt to a mixing means at a variably controllable flow rate;

(b) supplying granulated rubber to said mixing means at a known constant feed rate;

(c) mixing the supplied molten asphalt and the supplied granulated rubber in said mixing means to produce a premixed asphalt-rubber composition;

(d) extracting the premixed asphalt-rubber composition from said mixing means at a variably controllable flow rate;

(e) directing the extracted premixed asphalt-rubber composition under pressure through an in-line motionless mixer for producing a thoroughly blended asphalt-rubber composition; and

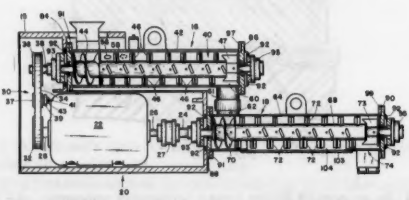
(f) delivering the thoroughly blended asphalt-rubber composition from said in-line motionless mixer to a point of use.

4,322,168

TWO-TUBE CONTINUOUS SAND MULLER

Rodney L. Hartung, Milford, Mich.; Dennis L. McCann, Letts, Iowa; Larry W. Uhre, Muscatine, Iowa; Richard P. Bergmann, Atalissa, Iowa; James A. Hostetter, Morning Sun, Iowa, and Nicholas J. Konrad, Atalissa, Iowa, assignors to Carver Foundry Products, Muscatine, Iowa

Filed Apr. 25, 1980, Ser. No. 143,783
Int. Cl.³ B28C *5/14*
U.S. Cl. 366—15 **12 Claims**



1. A continuous sand muller for mixing foundry sand and binder additives for core and mold production, said muller comprising:

a frame;

premixing means removably secured to said frame for mixing sand and a binder catalyst additive, said premixing means including an elongated sleeve defining a sand inlet at one end and an outlet at the other end, a high intensity

auger means rotatably mounted within said sleeve for blending and continuously conveying a sand and additive mixture from the inlet to the outlet, and a binder catalyst additive inlet means on said sleeve for feeding said binder catalyst additive to said premixing means;

mounting means engaging said frame for removably mounting said premixing means to said frame so that said premixing means may be removed from said frame as a unit and without disassembly;

primary mixing means removably secured to said frame for receiving the premixed sand and binder catalyst additive mixture and mixing same with a binder resin additive, said primary mixing means including an elongated primary sleeve having a primary inlet at one end and a primary outlet at the other end, said primary inlet being positioned below said outlet of said premixing means to receive the mixture from said premixing means, a binder resin additive inlet means on said primary sleeve for feeding a resin additive to said primary mixing means, a high intensity primary auger means within said sleeve for continuously mixing said premixed sand and binder catalyst additive mixture with said binder resin additive and conveying said mixture to said primary outlet, and means for rotatably mounting said primary auger means within said sleeve;

another mounting means engaging said frame for removably mounting said primary mixing means to said frame so that said primary mixing means may be removed from said frame as a unit without disassembly; and

drive means on said frame for positively rotating said auger means of said premixing means and said primary auger means at the same volumetric rate, said means for rotatably mounting said primary auger means comprising a pair of mounting plates carried by said primary sleeve, one at each end thereof, said primary auger means including an elongated shaft; and a pair of bearing assemblies, each secured to one of said mounting plates and rotatably receiving said elongated shaft, said another mounting means removably securing one of said mounting plates to said frame.

4,322,169

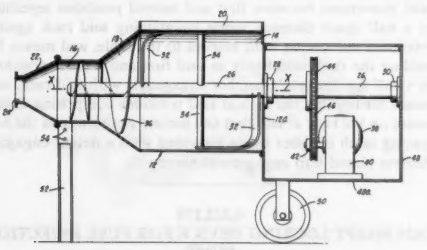
CLAY MIXING APPARATUS

Randolph C. Wood, 9460 Carmel Rd., Atascadero, Calif. 93422

Filed Jun. 12, 1980, Ser. No. 158,940

Int. Cl.³ B29B *5/00, 1/06*

U.S. Cl. 366—77 **6 Claims**



1. A device for mixing and extruding plastically workable ingredients, comprising:

(a) a substantially horizontally disposed mixing chamber having a material inlet;

(b) a coaxially aligned substantially horizontally disposed spaced apart extrusion chamber having a material outlet, said extrusion chamber being operably interconnected with said mixing chamber to form an integral enclosure;

(c) material mixing means disposed within said mixing chamber, said mixing means being rotatable in a first and second direction about the longitudinal axis of said mixing chamber and comprising a pair of horizontally spaced apart radially extending curved mixing blades each said blade being constructed and arranged to impart a mixing action to the material within said mixing chamber upon rotation of said mixing means in said first direction and each being provided with an angularly disposed face adapted to urge the material within said mixing chamber toward said extrusion chamber only upon rotation of said mixing means in said second direction, whereby said material is retained in said mixing chamber until said mixing means is rotated in said second direction; and

(d) material extruding means disposed within said extrusion chamber, said extruding means being rotatable about an axis coincidental with the axis of said mixing chamber and including material impelling means, said material impelling means comprising a substantially horizontally disposed, conically shaped helix constructed and arranged to receive the material from said mixing means only upon rotation of said mixing means in a second direction and continuously urge the material toward said material outlet.

4,322,170

APPARATUS FOR THE PREPARATION OF PVC-POWDER

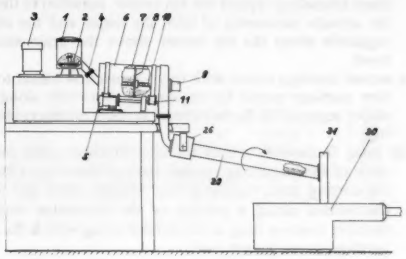
Horst Papenmeier, Talweg 2, 5840 Schwerte, Fed. Rep. of Germany

Filed Aug. 23, 1979, Ser. No. 68,900

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837435

Int. Cl.³ B01F *13/10*

U.S. Cl. 366—141 **17 Claims**



1. Apparatus for preparing material used in the production of plastic products, for example products extruded from a mixture of PVC powder and additives, said apparatus comprising the combination of:

a first drum including an internal vane that is arranged to contact the material to be prepared and outlet means for discharging the contents of said first drum;

drive means coupled to said vane for the rotation thereof whereby the material that comes in contact with said vane is frictionally heated;

a second, elongated drum having inlet means proximate one end thereof for receiving the frictionally heated material that is discharged from said first drum and outlet means proximate the opposite end thereof;

means for rotating said second drum about the longitudinal axis thereof;

means for uniformly applying heat directly to the contents of said second drum prior to the discharge of the contents therefrom; and

an elongated metering pipe having a first end thereof coupled to said outlet means of said second drum and a second end adapted to be coupled to a utilization device such as an extruder, said first end of said metering pipe being at a higher elevation than said second end thereof, there being further included means for rotating said metering pipe

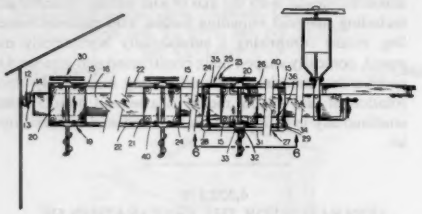
about the longitudinal axis thereof and means for applying heat to the interior of said metering pipe.

4,322,171

GRAIN STIRRING APPARATUS

Donald Y. Clark, R.R #1, Central City, Merrick County, Nebr. 68826

Filed Oct. 17, 1980, Ser. No. 197,881
Int. Cl.[3] B01F *7/24, 7/30*
U.S. Cl. 366—261 10 Claims



1. An improved grain stirring apparatus for operation within a circular grain bin comprising:

a first carriage means, having down auger means for stirring stored grain rigidly affixed thereto, for movement radially back and forth along no more than approximately a one-third portion of a major segment lying between the bin center and the bin wall, of a radially-extended horizontal support member, said member also having a minor segment extending beyond the bin center, mounted in the bin for arcuate movement of both the major and the minor segments about the bin center above the grain storage level;

a second carriage means with rigid connection means to the first carriage means for movement therewith along the major segment of the horizontal support member, including:

an open framework means for unobstructed radial movement of a third carriage means, having down auger means for stirring grain rigidly affixed thereto, back and forth therewithin along a portion of the horizontal support member twice as long as the portion along which the first carriage means moves; and

cable and pulley means interconnecting said second carriage means, said third carriage means, and said horizontal support member for moving said third carriage means along the horizontal support member a distance and at a speed twice that of the first carriage means; and

carriage drive means mounted on the minor segment of the horizontal support member for moving the rigidly connected first and second carriage means back and forth along the horizontal support member.

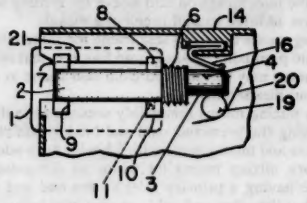
4,322,172

REPLACEABLE REINKER FOR AN INKED RIBBON CARTRIDGE

Edward D. Furrow, Crimora, Va., assignor to General Electric Company, Waynesboro, Va.

Continuation of Ser. No. 973,357, Dec. 26, 1978, abandoned.
This application Jun. 16, 1980, Ser. No. 159,426
Int. Cl.[3] B41J *31/14*
U.S. Cl. 400—202.4 10 Claims

1. In combination, a cartridge containing within its walls an inking roller and inked ribbon which is movable in contact with said roller, means for reinking said ribbon during movement of said ribbon comprising a replaceable container, said container comprising an exposed wick and an ink reservoir containing ink that is released through said exposed wick, said cartridge comprising an opening, engaging means on said container and said cartridge, said engaging means dimensioned to engage said container with said cartridge in response to said wick being inserted into said opening, and means for locking said wick against said roller and said container to said cartridge



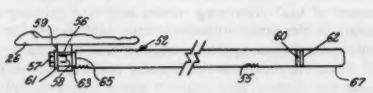
in response to said exposed wick being inserted into said opening.

4,322,173

HALF-SPACING FEED MECHANISM FOR MARKING MACHINE

Roy A. Schacht, 744 Des Peres Rd., St. Louis, Mo. 63131

Division of Ser. No. 959,785, Nov. 13, 1978, Pat. No. 4,229,111.
This application Sep. 19, 1979, Ser. No. 77,007
Int. Cl.[3] B41J *19/58*
U.S. Cl. 400—303 3 Claims



1. In a marking machine having a moveable work table supporting a work piece to be marked by marking characters, said table being relatively moveable with respect to said characters to advance the work piece as said work piece is being marked, table advancing mechanism comprising a toothed feed rack having a series of teeth equi-distantly spaced along a side of the rack and feed pawl means engageable with said rack for advancing said table the distance between adjacent teeth for each marking operation, the improvement comprising means for providing a half-tooth spacing, said half-tooth spacing means comprising means for supporting said rack for limited axial movement between first and second positions separated by a half space distance while maintaining said rack against rotational movement with respect to the table, and means for holding the rack selectively in said first and second positions by a half spacing latch member engageable with said rack, said means for holding the rack at said positions comprising detent means on the rack at said first and second positions and the half spacing latch member being provided with a detent engaging element biased into engagement therewith.

4,322,174

CAM SHAFT LOCKING DEVICE FOR FUEL INJECTION PUMP

Yoshiya Ishii, Toyota; Nobuyuki Fujitani; Hiroshi Imamura, both of Kariya; Kazuyoshi Arai, Hino, and Toshiaki Aoki, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

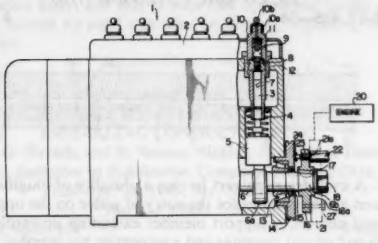
Filed Feb. 23, 1979, Ser. No. 14,903
Claims priority, application Japan, Feb. 24, 1978, 53-21359
Int. Cl.[3] F16B *1/00;* B65D *59/00;* F02M *39/00;* F04B *39/00*
U.S. Cl. 403—12 4 Claims

1. A cam shaft locking arrangement for a fuel injection pump for an internal combustion engine which includes a pump body rotatably supporting a cam shaft which has an end outside said body with a coupling block secured to the end for connection to a member driven by the engine, comprising:

a locking plate, having a recessed guide portion for snugly

receiving a locking pin therein, secured to a fixed portion on the pump body for adjustment of the position of said plate relative to the body;

means defining a threaded opening in the coupling block aligned with said recessed guide portion; and



a locking pin having an intermediate portion thereof threadably engaged in said threaded opening with an end thereof fitting snugly in said recessed guide portion.

4,322,175

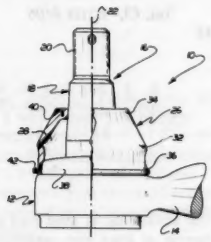
JOINT ASSEMBLY

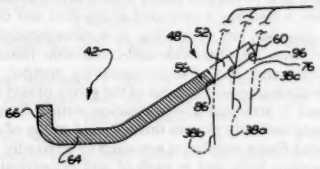
Donald E. Szczesny, Sterling Heights, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed May 12, 1980, Ser. No. 148,769

Int. Cl.³ F16C *11/00*; F16D *1/12*

U.S. Cl. 403—134 **8 Claims**





1. A joint assembly comprising a housing having a circular outer side surface which may have any diameter within a range of diameters, seal means for enclosing at least a portion of said housing, and retainer means for cooperating with said circular outer side surface of said housing to hold said seal means on said housing when said circular outer side surface has any one diameter in the range of diameters, said retainer means including first means for gripping said circular outer side surface of said housing when said one diameter is in a central portion of the range of diameters, second means for gripping said circular outer side surface of said housing when said one diameter is in the range of diameters and is larger than diameters in the central portion of the range of diameters, and third means for gripping said circular outer side surface of said housing when said one diameter is in the range of diameters and is smaller than diameters in the central portion of the range of diameters.

4,322,176

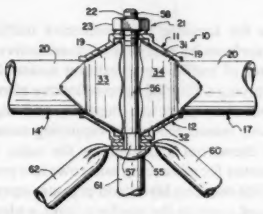
TUBULAR BEAM JOINT

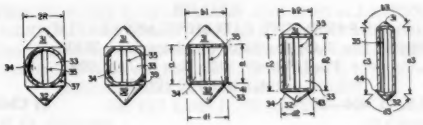
Alfred L. Johnson, Jr., Manhattan Beach, Calif., assignor to Lajet Energy Company, Abilene, Tex.

Filed May 14, 1980, Ser. No. 149,756

Int. Cl.³ F16D *1/00, 3/00*

U.S. Cl. 403—219 **19 Claims**





1. A joint for connecting a tubular beam to a housing, the combination comprising:

a housing including a socket having two opposed converging walls and two opposed diverging walls, said walls defining an opening in said housing; and

a hollow tubular beam having a main portion and a deformed end portion, said main portion and end portion being formed from a single piece of material,

said end portion being received in said housing socket and said main portion extending from said opening,

said end portion comprising:

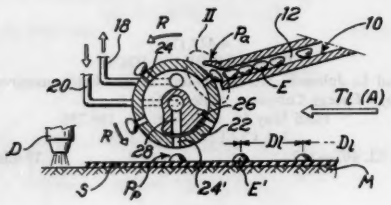
first and second outwardly diverging opposed faces contacting, respectively, said opposed diverging walls in said socket, and

third and fourth inwardly converging opposed faces contacting, respectively, said opposed converging walls in said socket,

said end portion having a perimeter which is greater than the perimeter of said opening,

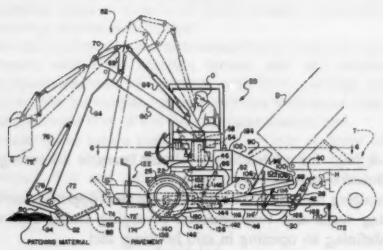
said end portion having a wall thickness that is less than the wall thickness of said main portion.

4,322,177
METHOD AND DEVICES FOR FORMING HIGHLY RETRO-REFLECTING ROADWAY SURFACE MARKING
Ludwig Eigenmann, POB 8 CH 6833, Vacallo, Switzerland
Filed Jul. 2, 1979, Ser. No. 54,145
Claims priority, application Italy, Jul. 7, 1978, 25462 A/78
Int. Cl.³ E01C 23/16
U.S. Cl. 404—83 6 Claims



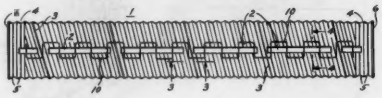
1. A device for forming retro-reflective traffic regulating signs on road surfaces by applying retro-reflective elements to a marking layer of traffic wear-resistant material comprising means for supplying a flow of retro-reflective elements; means for aligning said retro-reflective elements, said aligning means being operatively connected to said supplying means to receive said elements therefrom and aligning the same in predetermined rows; means for advancing said rows to a position facing the surface of the marking layer; and pressure-operative means for applying said rows to the marking layer under pressure in a direction normal to the elongation of the marking layer and to the light beams emanating from vehicles travelling along the road surface.

4,322,178
PAVEMENT PATCHING APPARATUS
Billy R. Lee, P.O. Box 8433, Charlotte, N.C. 28208
Filed Feb. 29, 1980, Ser. No. 125,990
Int. Cl.³ E01C 19/00
U.S. Cl. 404—83 11 Claims



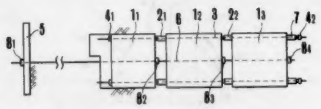
1. Pavement patching apparatus of the type that is movable to locations for repairing pavement defects adjacent said locations, said apparatus comprising hopper means for containing a supply of patching material; backhoe means mounted on said apparatus and having a bucket; and means mounted on said apparatus for operating said backhoe means to manipulate said backhoe bucket to position said backhoe bucket selectively at said hopper means and at pavement defects, to manipulate said backhoe bucket at pavement defects for working on pavement defects in preparation for receipt of patching material, to position said backhoe bucket to receive patching material from said hopper means, and to manipulate said backhoe bucket to dispense patching material therefrom onto prepared pavement defects.

4,322,179
OPEN TOP DRAIN
Larry N. Lamphier, Mechanicsburg, Pa., and Walter A. Meyers, Bel Air, Md., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.
Filed Apr. 28, 1980, Ser. No. 144,118
Int. Cl.³ E01C 11/22; E02B 11/00
U.S. Cl. 405—36 4 Claims



1. A cylindrical culvert having a plurality of longitudinally spaced apart openings for the entry of water on the upper side of said culvert, a support member extending upwardly from each end of said openings and a serpentine bar member spaced vertically above said openings in a horizontal plane and secured to the upper ends of said support members.

4,322,180
METHOD AND APPARATUS FOR ADVANCING CYLINDRICAL BODIES UNDERGROUND
Koichi Uemura, No. 3-11, 1-chome, Sakura-machi, Koganei-shi, Tokyo, and Makoto Uemura, Koganei, both of Japan, assignors to Koichi Uemura, Tokyo, Japan
Filed Dec. 4, 1979, Ser. No. 99,991
Claims priority, application Japan, Mar. 13, 1979, 54-28247; Mar. 17, 1979, 54-30556; Mar. 19, 1979, 54-31182; Apr. 2, 1979, 54-38432
Int. Cl.³ E21D 9/06
U.S. Cl. 405—141 23 Claims



1. A method for advancing at least two cylindrical bodies underground wherein at least two underground cylindrical bodies are laid in longitudinal alignment; thrusting jacks are disposed between said cylindrical bodies; a connecting member is arranged to longitudinally pierce through said cylindrical bodies; a fastener is provided at the fore end of said connecting member; an advancing jack arrangement which is provided with an attachable-and-removable fastener is disposed at the rear end of said connecting member; a suitable anchor body is disposed in front of the group of said cylindrical bodies and is arranged in combination with a fixing member which longitudinally pierces through said group of cylindrical bodies; said fixing member is arranged to be fixedly connected to said anchor body and to each of said cylindrical bodies by means of removable-and-attachable fasteners to interlink said cylindrical bodies for advancing them, the operation of advancing said cylindrical bodies including following steps:

said fasteners disposed at both ends of said connecting member is released; the fastener of said fixing member is fixed only to the second cylindrical body; said thrusting jacks are operated to move forward the first cylindrical body to the extent of one cycle with a reaction force required for advancing obtained from a sum total of the reaction force of said second cylindrical body and that of said anchor body which is linked therewith; then said thrusting jacks are released; said fasteners at both ends of said connecting member are tightened; fixing connection of said fixing member is shifted from said second cylindrical body to said first cylindrical body; then said advancing jack arrangement disposed in the rear of said second cylindrical

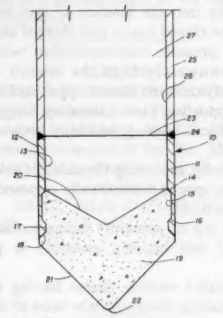
body is operated to move said second cylindrical body forward to the extent of one cycle with a required reaction force obtained either from a sum total of the reaction force of said first cylindrical body and that of said anchor body which is linked therewith or from a sum total of the reaction forces of first and third cylindrical bodies and said anchor body; and said at least two cylindrical bodies can be moved forward one after another by repeating these steps.

4,322,181

CONDUCTOR PIPE PLUG AND METHOD OF INSTALLING CONDUCTOR PIPE

Steven G. Streich, and R. Benton Nickles, Jr., both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 28, 1980, Ser. No. 144,091
Int. Cl.³ E02D 5/54
U.S. Cl. 405—224 **5 Claims**



1. A method of installing a conductor pipe employed in sinking a well in a sea bottom, comprising:
providing a conductor pipe;
affixing a plug to the lower end of said conductor pipe, said plug having a fracturable core therein;
driving said conductor pipe into said sea bottom; and
fracturing said core of said plug substantially simultaneously with said driving.

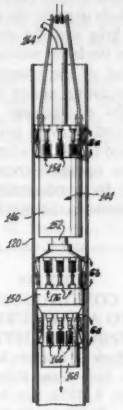
4,322,182

APPARATUS AND METHOD FOR UNDER-WATER JACKING OF PILES

John T. Ostgaard, 7855 Vicksburg Ave., Los Angeles, Calif. 90045

Continuation-in-part of Ser. No. 3,593, Jan. 15, 1979. This application Nov. 29, 1979, Ser. No. 98,505
Int. Cl.³ E02D 5/00
U.S. Cl. 405—227 **10 Claims**

1. A method for driving piles for an off-shore oil or gas tower comprising the steps of:
(a) positioning said tower on the ocean floor, said tower having a plurality of pile receiving guides extending upwardly from the ocean floor;
(b) lowering a casing over a selected pile and aligning it with a selected one of said guides;
(c) clamping said casing to said selected guide to form an upward extension of said guide;
(d) lowering a jacking cylinder into said casing and positioning said jacking cylinder under water and above said pile, said cylinder having a reciprocal piston therein;
(e) securing said cylinder to said casing to prevent upward movement of said cylinder;
(f) hydraulically causing said piston to move downwardly within said cylinder, thereby jacking said pile downwardly;
(g) retracting said piston within said cylinder;
(h) releasing said cylinder from said casing;
(i) lowering said cylinder;
(j) again causing said piston to move downwardly with said cylinder, thereby further jacking said pile downwardly;
(k) repeating steps f through j until said pile has been driven to a desired depth;



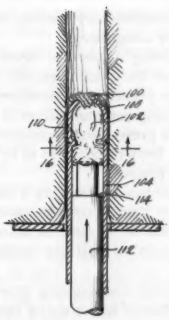
(l) withdrawing said cylinder from said casing;
(m) releasing said casing from said selected guide;
(n) positioning said casing in alignment with another one of said guides; and
(o) repeating steps c through k.

4,322,183

FRICTION ROCK STABILIZER AND INSTALLATION LUBRICATING CEMENT APPARATUS AND METHOD

Armand Ciavatta, 703 Birch Hill Dr., Bridgewater, N.J. 08807

Continuation-in-part of Ser. No. 127,959, Mar. 7, 1980. This application Mar. 4, 1981, Ser. No. 240,377
Int. Cl.³ E21D 21/00, 20/02
U.S. Cl. 405—261 **13 Claims**



1. In a device for supporting mine roof strata comprising an elongated shank structure having an exterior periphery for frictionally engaging a wall of a drilled hole in the mine roof strata at least at annularly spaced portions substantially throughout the vertical extent of the shank structure when operatively engaged within the hole, the improvement in combination therewith which comprises
a charge of hardenable viscous material of a quantity sufficient to extend between the wall of the hole and the exterior periphery of said shank structure generally through-

out the vertical extent of the shank structure when operatively engaged therewith, and

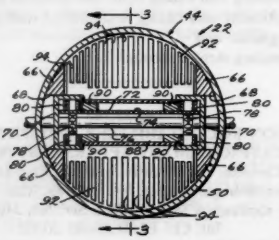
means for (1) containing therein said charge of viscous material in a viscous state so as to enable said charge to be initially positioned adjacent the lower end of the hole and (2) releasing therefrom said charge when so initially positioned so as to enable the upward movement of said shank structure in said hole to apply the released charge between the wall of the hole and the exterior periphery of the shank structure as the latter moves upwardly into the hole while the material of the charge is viscous to thereby reduce by a lubricating action the frictional resistance occasioned by the engagement of the shank structure within the hole and so as to permit the material of the charge thus applied to harden after the shank structure has been moved into operative relation with the hole to thereby increase by a cementing action the frictional gripping action between the shank structure and the mine strata.

4,322,184

APPARATUS FOR CONTINUOUSLY FEEDING SOLID PARTICLES INTO A PRESSURIZED CONTAINER HAVING AN IMPROVED LIFTING MECHANISM

Erwin D. Funk, and Mark D. Barrett, both of Glens Falls, N.Y., assignors to Kamyr, Inc., Glens Falls, N.Y.

Filed Dec. 5, 1979, Ser. No. 100,381
Int. Cl.³ B65G *53/30*; C10J *3/30*
U.S. Cl. 406—82 **16 Claims**



1. Apparatus for continuously feeding solid particles into a pressurized container comprising;

a vessel for confining a body of liquid having a specific gravity less than the specific gravity of said particles in proximity to the pressurized container,

means for maintaining communication of the pressure conditions within said pressurized container with a free surface of the confined body of liquid so as to maintain said body of liquid under pressure,

means for continuously introducing a supply of solid particles entrained in liquid under pressure into the body of liquid under pressure so that the entrained particles will move continuously toward the bottom portion of said body of liquid,

mechanical means for continuously moving the particles in the bottom portion of said body of liquid upwardly along a non-foraminous confined path which extends from a position adjacent the bottom portion of the body of liquid upwardly above the level of the aforesaid free surface thereof to a feed position in pressure communication with the interior of the pressurized container from which the particles can be fed into the pressurized container so that the entraining liquid filling the spaces between the solid particles being moved upwardly will drain from the particles downwardly into the body of liquid during the aforesaid movement of the particles above the free surface of the body of liquid whereby substantially the only liquid retained with said particles as they pass from said feed position and into said pressurized container is that amount which is retained by surface adherence, and

means for continuously withdrawing liquid from said body of liquid at a level at or near the free surface thereof in an amount so related to the amount of particles and entrained liquid introduced thereto and particles removed thereby along said path sufficient to maintain said free surface at a substantially constant level and along a liquid withdrawal flow path arrangement devoid of restrictions of a size less than that necessary to permit free passage thereby of any fine particles entrained in the withdrawn liquid,

the improvement comprising said mechanical means including

an elongated cylindrical housing assembly operatively disposed with its axis extending at an angle to the horizontal and to the vertical,

said housing assembly including end structures closing the upper and lower ends thereof, water and particle inlet means for pressure communication with the vessel leading downwardly into the interior of said housing assembly adjacent the closed lower end thereof and particle outlet means for pressure communication with the container leading downwardly from the interior of said housing assembly adjacent the closed upper end thereof,

a particle supporting plate extending longitudinally within said cylindrical housing assembly between the end portions thereof,

means for fixedly mounting the sides of said plate between horizontally spaced diametrically opposed portions of said housing assembly,

said plate having an upwardly facing surface spaced above the axis of said housing assembly in parallel relation thereto,

a pair of parallel endless chains having upper operative flights extending along opposite sides of the upper surface of said plate, lower parallel return flights and arcuate ends trained about sprockets carried by said housing assembly at the ends of said plate, and

a series of spaced perforated particle moving structures extending between said chains operable during the movement of said chains through said operative flight to move therewith over the upper surface of said plate and upwardly through the space thereover defined by the upper periphery of said housing assembly so that particles introduced into the lower portion of the space through said inlet means are moved positively upwardly through the liquid free surface and then discharged through said outlet means in a condition in which the liquid has been substantially drained therefrom.

4,322,185

STAGGERED HOB

Tatsuo Tanimoto; Ryuichi Ozawa, and Noriyoshi Tarumasa, all of Hyogo, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 5, 1980, Ser. No. 127,531
Claims priority, application Japan, Jul. 16, 1979, 54-98377[U]
Int. Cl.³ B26D *1/12*
U.S. Cl. 407—23 **4 Claims**

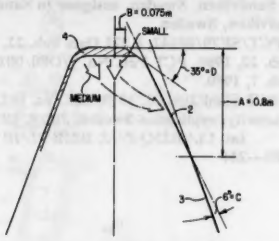
1. A hob comprising:

a cylindrical body having a longitudinal axis;

a plurality of tooth elements each with a top edge portion of the same height arranged in succession along at least one helical line extending around said longitudinal axis of said hob wherein shoulder portions of leading or trailing sides of each of said tooth elements are reduced from their basic contour in staggered fashion, each of said tooth elements comprising:

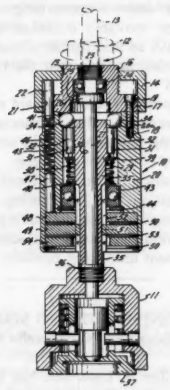
a first shoulder edge portion intersecting said top edge portion at a distance located 0.05 m to 0.1 m from the center line of each of said tooth elements at a first angle of 25° to 45°;

a second shoulder edge portion disposed adjacent said first shoulder edge portion; and



a third shoulder edge portion intersecting said second shoulder edge portion at a distance 0.5 m to 1.0 m from said top edge portion at a second angle of 3.5° to 10° wherein m represents a module.

4,322,186
TORQUE TRIGGERING CLUTCH
Monte J. Boling, 2 Crestwood Ave., Fairfield, N.J. 07006
Continuation of Ser. No. 880,101, Feb. 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 732,511, Oct. 14, 1976, abandoned. This application May 13, 1980, Ser. No. 149,544
Int. Cl.³ B23B *47/24, 31/38*
U.S. Cl. 408—139 **16 Claims**



1. A torque triggering clutch for releasing a tightening cluck having jaws comprising:

a. a trigger head which can rotate and move axially up or down when not rotating, operatively associated at its lower end with a tightening chuck having jaws for releasing said tightening chuck jaws when said trigger head moves axially up wherein said trigger head is connected to a rotating spindle having an external rod extending there through and also coacting with said trigger head whereby said trigger head is caused to rotate when said rotating spindle rotates and whereby said trigger head can move axially up or down when an upward or downward force is applied to said external rod;

b. a plunger having a plunger rod depending therefrom and extending through said trigger head and operatively associated at its lower end with said tightening chuck having jaws for releasing said tightening chuck jaws when said trigger head, plunger and plunger rod are moved axially up;

c. means for moving said plunger and said trigger head downwardly;

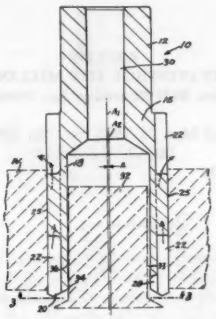
d. means for holding said plunger and said trigger head in the downwardly compressed position until said trigger head stops rotating when said rotating spindle stops rotating;

e. means for urging said trigger head upwardly when it stops rotating thereby pulling said tightening chuck having jaws upwardly until it bears against said plunger rod thereby releasing said tightening chuck jaws;

f. means for rotating said trigger head and said plunger rod; and,

g. means for stopping the rotation of said trigger head thereby allowing said trigger head to move upwardly thereby releasing said tightening chuck jaws.

4,322,187
ANNULAR HOLE CUTTER
Everett D. Hougen, G-5072 Corunna Rd., Flint, Mich. 48504
Filed Jun. 18, 1980, Ser. No. 160,300
Int. Cl.³ B23B *41/02*
U.S. Cl. 408—204 **11 Claims**

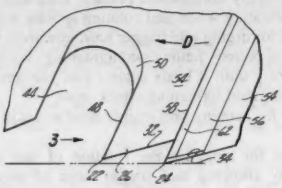


1. An annular hole cutter having a shank adapted to be engaged with a holder for rotation about the central axis of the shank, said shank having an inverted cup-shaped body portion fixedly supported at the lower end thereof, said body portion having a top wall and an annular side wall provided with a plurality of circularly arranged cutting teeth spaced circumferentially around the lower end thereof, the outer periphery of the side wall having helical flutes therein extending upwardly from the teeth and separated by helical lands therebetween, the outer periphery of said shank and the circle defined by the outer periphery of said teeth being concentric to said axis to a high degree of accuracy and the circle defined by the inner periphery of said teeth being concentric to a high degree of accuracy to an axis parallel to and offset slightly radially a predetermined distance from said central axis.

4,322,188
ANNULAR HOLE CUTTER
Everett D. Hougen, G-5072 Corunna Rd., Flint, Mich. 48504
Filed Sep. 2, 1980, Ser. No. 183,017
Int. Cl.³ B23B *41/02, 27/10, 51/00*
U.S. Cl. 408—206 **7 Claims**

1. An annular hole cutter comprising an inverted cup-shaped body having a top wall and an annular side wall, said side wall having a plurality of circumferentially spaced cutting teeth around its lower end, each cutting tooth having at least two radially extending cutting edges thereon, the cutting edges on each tooth being staggered circumferentially and axially, said side wall having helical flutes extending upwardly between successive teeth, the circumferentially successive flutes being separated by helical lands, the leading edge portion of each land comprising a margin concentric to the axis of the cutter

and extending axially to the radially outermost cutting edge, said lands being radially relieved directly behind each margin,



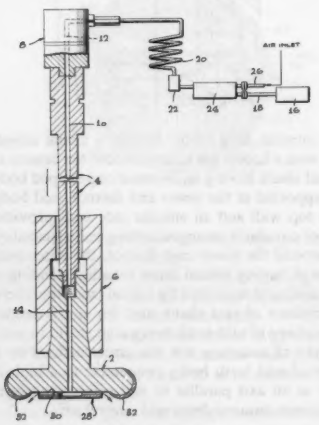
said margins having a circumferential width of not more than about 0.030 inches adjacent said cutting edges.

4,322,189

COOLANT CONTROL FOR MILLING TOOLS

Leonard A. Briese, 5039 Browndeer La., Rancho Palos Verdes, Calif. 90274

Filed Mar. 13, 1980, Ser. No. 129,905
Int. Cl.³ B23C 9/00
U.S. Cl. 409—136 **13 Claims**



1. A coolant flow control system for milling tools adapted to be used on milling machines having a center-feed coolant system and a drawbar having a central longitudinal duct through which coolant may be provided, said milling tools characterized by having an axial duct and cutting inserts mounted thereon, said coolant flow control system comprising:

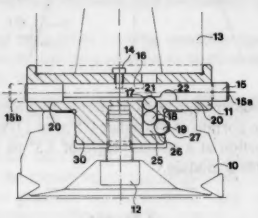
flow plate means for redirecting coolant piped through said axial duct of a milling tool to cool cutting inserts mounted thereon, said flow plate means being adapted to be mounted on the base underside of a milling tool adjacent cutting inserts to be cooled, said flow plate means comprising a disk having formed on one face thereof, a central receiving chamber and a plurality of spiral channels extending from said central receiving chamber to the peripheral edge of said disk.

4,322,190

MOUNTING DEVICE FOR MACHINING TOOLS

Ken G. Anderson, Årsunda, Sweden, and Sandvik Aktiebolag, 03, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

PCT No. PCT/SE79/00142, § 371 Date Feb. 22, 1980, § 102(e) Date Feb. 22, 1980, PCT Pub. No. WO80/00139, PCT Pub. Date Feb. 7, 1980
PCT Filed Jun. 21, 1979, Ser. No. 192,501
Claims priority, application Sweden, Jul. 4, 1978, 7807500
Int. Cl.³ B23Q 3/12; B23B 31/10
U.S. Cl. 409—234 **11 Claims**



1. In a mounting of the type which releasably connects a machining tool to a drive spindle, the mounting including an adapter coupled to said drive spindle and connected to said machining tool by a releasable primary connector, the improvement comprising an auxiliary connector on said adapter for preventing unintentional release of said machining tool from said adapter despite a loosening of said primary connector, said auxiliary connector comprising:

a blocking means movably mounted on said adapter and movable relative to said primary connector between:

a locking position holding said machining tool onto said adapter, and

an unlocking position releasing said machining tool,

an operating means operably connected to said blocking means and being movable on said adapter independently of said primary connector between:

a blocking position urging said blocking means into said locking position and preventing retraction of said blocking means into said unlocking position, and

a release position permitting retraction of said blocking means into said unlocking position.

4,322,191

DIE FINISH-CUTTING MACHINE

Manuel E. X. de Sousa, 765 N. Montello St., Brockton, Mass. 02401

Filed Jan. 8, 1980, Ser. No. 110,491
Int. Cl.³ B23C 1/16
U.S. Cl. 409—292 **27 Claims**

1. Apparatus for cutting a predetermined outline on a workpiece comprising:

a base,

a workpiece carriage and template carriage movably mounted one upon the other and the other movably mounted upon the base,

a cutter on the base for engaging and applying cutting force in a direction toward the workpiece and workpiece carriage,

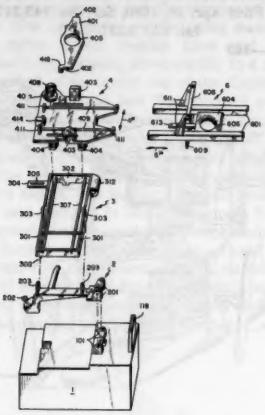
a workpiece holder on the workpiece carriage holding the workpiece for movement with the workpiece carriage relative to the cutter,

a template on the template carriage having the predetermined outline, and

a tracer on the workpiece carriage engaging the template and causing the workpiece carriage to follow the template outline,

the cutter and tracer being disposed on the base and workpiece carriage respectively so as to engage the workpiece

and template respectively in the same direction so that reaction of the workpiece and workpiece carriage to



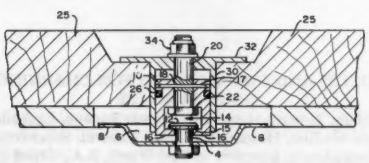
cutting force urges the template and tracer toward mutual engagement.

4,322,192

PALLET TIE-DOWN ASSEMBLY

Michael J. Zavada, Fairfield; John O. E. Crisi, Shelton, and Milton R. Turgeon, Enfield, all of Conn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 7, 1979, Ser. No. 92,123
Int. Cl.³ B60P *1/64, 7/08;* B63B *25/22*
U.S. Cl. 410—81 **4 Claims**



1. Anchoring assembly means for attaching an object to a mounted tie-down stud of the type having a laterally extending annular flange, comprising an attachment bolt, complementary clamp segments adapted to encircle the stud flange and the attachment bolt head to form a collar locking around both the stud flange and the bolt head to hold the bolt with its head adjacent the stud and with its free end extending upwardly, a retaining sleeve slideable over said collar to hold the clamp segments together in assembled position, means carried by said sleeve securing the sleeve when the object is held by the bolt, and means locking on said bolt for securing the object in place.

4,322,193

TENSION GAUGE

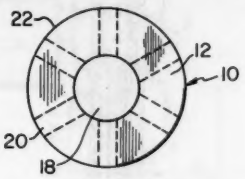
Keith E. Stahl, 320 B Dr., West Mifflin, Pa. 15122

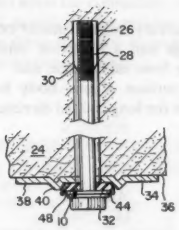
Filed Jun. 9, 1980, Ser. No. 157,655
Int. Cl.³ F16B *31/02*
U.S. Cl. 411—11 **6 Claims**

1. In a mine roof bolting assembly including a mine roof bolt for expansible engagement with a bore hole drilled into the roof of a mine and a mine roof plate having a central opening surrounded by an annular rib which is adapted to be pulled against the mine roof by applying tension to the bolt through a nut threaded to the bolt, and a washer disposed on the bolt between the plate and the nut, the improvement in a tension gauge for indicating tension on the bolt comprising:

A. a non-metallic right circular cylinder disposed on the bolt between the plate and the washer and having a central bore and an axial thickness between parallel top and bottom

B. a plurality of radially extending holes substantially equally spaced around the perimeter of the cylinder, the





central axis of each hole lying in a plane which is parallel to the planes of the top and bottom surfaces, and

C. an end of each hole in communication with at least one of the bore and the perimeter whereby when the gauge is employed with a bolt and within the annular rib the compression of the gauge by tightening the nut on the bolt results in flow of the non-metallic material with respect to the washer which is visually indicative of the tension on the bolt.

4,322,194

WALL ANCHOR WITH SELF-DRILLING CAPABILITY

Ruediger Einhorn, Katonah, N.Y., assignor to Coats & Clark, Inc., Stamford, Conn.

Filed Sep. 12, 1979, Ser. No. 74,760
Int. Cl.³ F16B *13/06*
U.S. Cl. 411—30 **1 Claim**

1. A wall anchor, comprising a hollow elongated body having:

(a) a generally cross-shaped entrance end tapered to a rounded point;

(b) a plurality of longitudinal flutes extending from the entrance end to a rotation-preventing region;

(c) a plurality of wedge-shaped fins having triangular cross-section in the rotation-preventing region of the anchor;

(d) a wall-engaging flange having peripheral portions contiguous with the rearward ends of the fins;

(e) an internal longitudinal recess having a generally rectangular cross-section with longer and shorter sidewalls, and internal longitudinal arcuate centering grooves in the centers of the longer sidewalls;

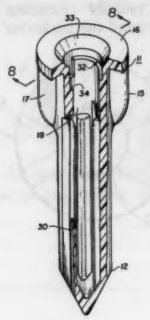
(f) at least two longitudinal slots extending between the entrance end and the fins;

(g) a longitudinal weakened separation plane strong enough to hold the anchor body together during installation in a hollow wall and weak enough to be severed after installa-

tion, by expansion of the anchor body when an object supporting member is inserted into said recess;

(h) a single turn helix formed in the wall of said recess adjacent said flange;

(i) at least one internal shoulder in the wall of said recess



defining a relatively large diameter recess portion adjacent said flange and a relatively small diameter recess portion remote from said flange; and

(j) the external surface of said body having a relatively smooth taper in the longitudinal direction from said flange to said point.

4,322,195

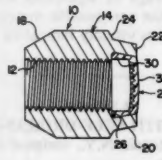
LUG NUT

Edward J. Rebish, Euclid; Terry D. Capuano, Hinckley, and John L. Barkocy, Hudson, all of Ohio, assignors to Russell, Burdsall & Ward Corporation, Mentor, Ohio

Filed Aug. 31, 1979, Ser. No. 71,567

Int. Cl.³ F16B 37/14

U.S. Cl. 411—431 **10 Claims**



1. A lug nut comprising: a nut having a body providing axially inner and outer surfaces, said axially inner surface having a thread continuously through the entire inner surface, said axially outer surface having a suitable drive means; at one end of said axially outer surface, a conical bottom section for tight engagement of a wheel to a vehicle axle hub; at axially the opposite end from said conical bottom section, said body providing a preformed axially extending insert receiving surface extending to a remote open end with a diameter greater than the groove diameter of said thread of said axial inner surface; an insert seat extending from said insert receiving surface to said axial inner surface; and an insert positioned within said insert surface having an end wall extending across said open end and an axially extending slightly conical integral flange, said insert having an unstressed diameter greater than the diameter of said open end, said insert being radially deflectable to a diameter at least as small as said open end of said body flange allowing said insert to pass through said open end, said insert having sufficient elastic memory to cause it to fit within said insert surface and against said seat with a tight fit.

4,322,196

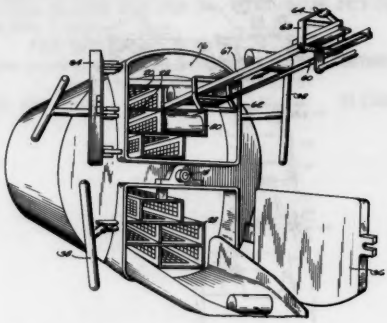
SOUP RETORT

Carl F. Hinshaw, P.O. Drawer AC, Lake Wales, Fla. 33853

Filed Apr. 24, 1980, Ser. No. 143,217

Int. Cl.³ A23L 3/12

U.S. Cl. 414—149 **4 Claims**



1. In a soup retort having a housing and a rotor contained within the housing, a motor for rotating the rotor about a rotational axis, a door at one end for axial loading and unloading of the retort, said rotor supporting a series of spaced can support racks which are oriented longitudinally of the retort so that the cans can be loaded through said door into said racks to tumble the cans in an end over end fashion during rotation of the rotor, the improvement for facilitating loading and unloading of the retort comprising lift means for tilting the retort rotational axis for elevating the end of the retort adjacent the doors to change the slope of the racks in an axial direction with respect to the horizontal to enable rolling of the cans into and from the storage racks along an axial path through said door to facilitate loading and unloading of said rotor through said door.

4,322,197

PROCESS AND INSTALLATION FOR CHARGING A SHAFT FURNACE

Rene Mahr, Howald-Hesperange; Henri Radoux, Luxembourg; Pierre Mailliet, Howald, and Emile Lonardi, Bascharage, all of Luxembourg, assignors to Paul Wurth, S.A., Grand Duchy of Luxembourg, Fed. Rep. of Germany

Filed Aug. 2, 1979, Ser. No. 62,969

Claims priority, application Luxembourg, Dec. 8, 1978, 80630

Int. Cl.³ B66C 17/08

U.S. Cl. 414—206 **5 Claims**

1. In apparatus for use in the delivery of solid material from the ambient environment into a pressurized furnace, the furnace having a vertical axis and including means internally thereof for distributing the material in a desired pattern, said distributing means including a rotatable material flow directing member, the improvement comprising:

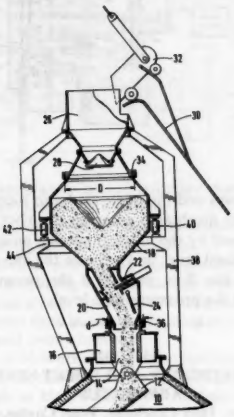
first material storage means, said first storage means including a chamber having vertically displaced material loading and discharge openings, said first storage means being alternately pressurized and depressurized;

frame means, said frame means being supported on and extending upwardly from the upper part of the furnace, said frame means including floor means, said floor means having floor member which extends generally transversely with respect to the furnace axis, said floor member having a centrally disposed opening therein;

means supporting said first storage means on said frame means and above the furnace, said supporting means including a plurality of load cell means for generating signals commensurate with the weight of said first storage means;

first flow control means for selectively establishing and interrupting direct communication between the interior of said first storage means and the interior of the furnace, said first flow control means including material delivery conduit means which extends from said first storage means discharge opening downwardly to a point aligned with a portion of the upper end of the distributing means rotatable member, said first flow control means further including isolation valve means which cooperates with said delivery conduit means whereby said first storage means chamber discharge opening may be placed in communication with the furnace interior through said isolation valve means, said delivery conduit means extending through said aperture in said frame means floor member;

first compensator means, said first compensator means permitting limited vertical movement of said first storage means, said first compensator means establishing a hermetic seal between said first flow control means conduit means and said frame means floor means about the periphery of the opening in said floor member;



second material storage means, said second storage means being fixed in position and being open to the ambient atmosphere at its upper end, said second storage means being supported on said frame means such that its lower end is at a higher elevation than said first storage means loading opening, said second storage means having a discharge opening in its lower end;

second flow control means for selectively establishing and interrupting communication between the interiors of said first and second storage means, said second flow control means including valve means for selectively establishing a hermetic seal between the interiors of said first and second storage means and permitting material flow from said second storage means into said first storage means under the influence of gravity; and

second compensator means, said second compensator means permitting limited relative vertical motion between said first and second storage means, said second compensator means establishing a flexible hermetic joint between said first storage means and said second flow control means.

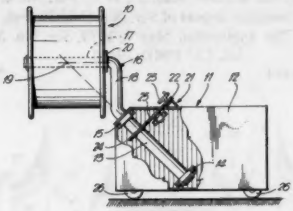
4,322,198

COIL HANDLING DEVICE

Bretislav P. Zuber, Montreal, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 16, 1980, Ser. No. 140,727
Int. Cl.³ B64H *19/02*
U.S. Cl. 414—754 **3 Claims**

1. A coil handling device comprising a coil support having a part rotatable upon a carrying means about an axis of rotation and having a coil support shaft for insertion axially within a coil, the coil support shaft being disposed so that the shaft axis is inclined to the axis of rotation and is substantially coincident with the axis of rotation at a point along the axis of rotation from the carrying means, and the coil support also comprising



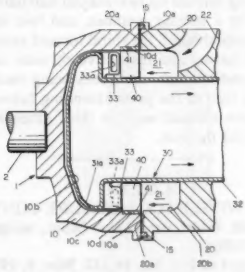
a connecting means between the rotatable part and the support shaft, and the support shaft being adjustable in position relative to the rotatable part upon the connecting means to dispose the resultant centre of gravity of the coil support and coil when mounted upon the shaft, at a point in which it is substantially coincident with said axis of rotation.

4,322,199

HIGH SPECIFIC SPEED ROTARY CHAMBER PUMP

John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., City of Commerce, Calif.

Filed Mar. 23, 1979, Ser. No. 23,209
Int. Cl.³ F04D *1/14*
U.S. Cl. 415—89 **3 Claims**



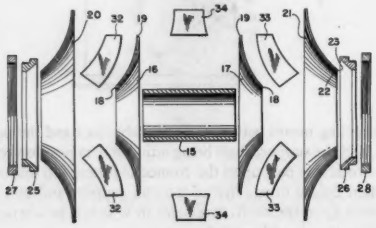
1. A rotary pump comprising: a rotating housing defining a generally cylindrical fluid chamber; an annular, axial extension disposed on the perimeter of said housing and having a bore diameter substantially equal to the diameter of said fluid chamber; a stationary annular housing sealingly engagable with said axial extension; a stationary hollow, fluid pickup member having an enlarged head portion thereof disposed in the radially outer portions of said rotating fluid chamber; said head portion having openings therein to receive rotating fluid; another smaller diameter, thin-walled tubular portion on said fluid pickup member extending axially concentrically through said axial extension and said stationary housing to define a pressured fluid outlet, all of the annular space between said other tubular portion and the inner wall of said axial extension constituting an annular fluid inlet passage producing axial flow of fluid toward said fluid chamber; the fluid flow areas of said inlet and outlet passages being substantially equal to the cross-sectional area of said pumping chamber less the area of said thin-walled tubular portion, and vane means on said axial extension projecting into said annular fluid inlet passage for

rotating the axially moving fluid passing therethrough prior to entry into said rotating fluid chamber.

4,322,200
HEAVY DUTY IMPELLER

Owen E. Stiegelmeier, 698 Wyleswood Dr., Berea, Ohio 44017

Division of Ser. No. 829,563, Aug. 31, 1977, Pat. No. 4,155,151, which is a continuation-in-part of Ser. No. 656,539, Feb. 9, 1976, abandoned. This application May 7, 1979, Ser. No. 36,327
Int. Cl.³ F04D *29/30*
U.S. Cl. 416—184 **7 Claims**



1. A fabricated heavy duty impeller comprising a shaped outer shroud and a shaped hub, a plurality of regularly circumferentially spaced spiral vanes extending axially therebetween to provide an axially extending inlet and a radially extending annular outlet when said impeller is rotated in one direction, continuous weldments securing said shroud, vanes and hub integrally together, each of said vanes being formed from a plurality of pieces secured integrally together by continuous transverse weldment, the impeller being of the double-suction type, the hub being formed by two shaped hub halves mounted on and secured to a tubular member, and two shaped outer shrouds on each side thereof, the spiral formed vanes extending between the hub halves and respective shrouds, and between the shrouds beyond the hub, the vanes being each fabricated from three parts, two of the parts extending between the hub half and respective shroud, and the third extending between the shrouds beyond the hub.

4,322,201
IV PUMP WITH BACK PRESSURE CONTROL

G. Kent Archibald, White Bear Lake, Minn., assignor to AVI, Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 19,233, Mar. 9, 1979, Pat. No. 4,236,880. This application Sep. 21, 1979, Ser. No. 77,620
Int. Cl.³ F04B *49/08, 39/08*
U.S. Cl. 417—279 **8 Claims**

1. A volumetric infusion pump for pumping fluid from a reservoir to a patient, the volumetric infusion pump comprising:

a pump inlet for connection to the reservoir;

a pump outlet for connection to the patient;

rolling diaphragm pumping chamber means connected between the pump inlet and the pump outlet;

pressure sensing means connected between the rolling diaphragm pumping chamber means and the pump outlet for sensing pressure; wherein the pressure sensing means comprises:

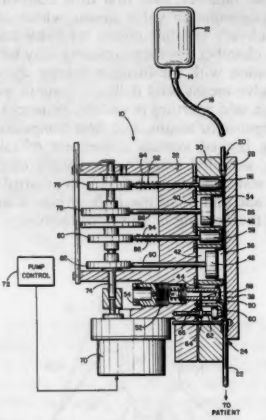
a cylinder;

a piston movable in the cylinder;

flexible diaphragm means between the cylinder and the piston defining a pressure sensing chamber; and

spring bias means for applying a force urging the piston in a direction which reduces the volume of the pressure sensing chamber, and wherein pressure in the pressure sensing chamber applies a force urging the piston in a direction which increases the volume of the pressure sensing chamber; and

valve means between the pressure sensing means and the pump outlet for controlling fluid pressure in the rolling diaphragm pumping chamber means wherein the valve means restricts a flow passage between the pumping

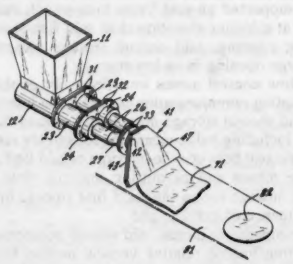


chamber means and the pump outlet to increase pressure in the rolling diaphragm pumping chamber means if the pressure sensed by the pressure sensing means is less than a predetermined level, and wherein the valve means does not restrict the flow passage if the pressure sensed is greater than the predetermined level.

4,322,202
DOUGH EXTRUDER AND SHEET SPREADER APPARATUS

Salvator Martinez, 1106 Charlinda, West Covina, Calif. 91790

Filed Nov. 21, 1980, Ser. No. 208,990
Int. Cl.³ A21C *3/04*
U.S. Cl. 425—208 **5 Claims**



1. An extruder and dough spreader apparatus for viscious plastic material, said apparatus comprising:

a body having an opening disposed on its top for feeding said material therein and at least one opening disposed on its side;

a pair of conveyor screws parallely disposed within said body and extending through said side opening;

a pair of tubular housings fixed to said side opening and each of said housings enclosing a respective screw;

a Y-type fitting having two inlet ducts communicating with an outlet duct;

each of said inlet ducts on said fitting being coupled to a respective one of said housings;

a spreader having an inlet passage and an elongated egress;

said inlet passageway of said spreader being coupled to said outlet of said Y-type fitting;

said conveyor screws being disposed side by side substantially in the same horizontal plane;

each of said conveyor screws having a larger outer diameter in its portion adjacent said body than its outer diameter in its portion adjacent said Y-fitting;

each of said housings having a larger inner diameter in its portions adjacent said body than its inner diameter in its portion adjacent said Y-fitting.

4,322,203

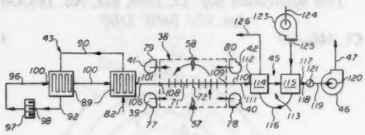
PIPE BURNOUT OVEN WITH POLLUTION CONTROL

Aziz A. Jamaluddin, P.O. Box 7060, Woodlands, Tex. 77380

Filed Mar. 9, 1981, Ser. No. 242,017

Int. Cl.³ F26D *7/04*; C21B *7/22*

U.S. Cl. 432—72 **14 Claims**



1. A pipe burnout oven and pollution control and heat recovery system therefor, comprising

an elongated, insulated oven chamber for receiving pipe to be heated to burnout temperature,

a burner section comprising an insulated burner chamber having an opening communicating with the central portion of said oven chamber for withdrawing air therefrom and a direct fired burner for heating said air for recirculation to said oven chamber,

a plurality of blowers connected to said burner chamber and to said oven chamber for recirculating a large volume of heated air at high velocity for heating pipe in said oven chamber,

conduit means in said oven chamber extending linearly thereof having an inlet receiving air from said blowers and a plurality of spaced outlets for introducing heated air along the length of said oven chamber,

exhaust means for removing air from one end of said oven chamber at a low velocity and low volume, including

an insulated combustion chamber including a direct fired incinerator for burning substantially all of the combustible fumes in the air from said oven chamber volatilized in the course of heating pipe to burnout temperature, and

heat exchange means for recovering a major part of the heat in the air and combustion products from said incinerator prior to venting to atmosphere by said exhaust means.

4,322,204

HOT AIR RECIRCULATION BAKING OVEN

Rene Voegtlin, 2, Rue de la Colline, 67200 Oberhausbergen, and Philippe Bongard, 17, Rue Roswarg, 67600 Selestat, both of France

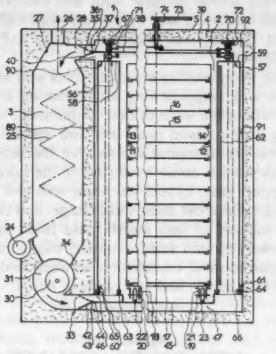
Filed Nov. 10, 1980, Ser. No. 205,260

Claims priority, application France, Nov. 13, 1979, 79 28406

Int. Cl.³ F27B *9/04*

U.S. Cl. 432—152 **10 Claims**

1. A hot air recirculating baking oven comprising a parallel-piped baking chamber having a door, an open trolley movable through said door into said baking chamber and having spaced shelves for supporting the products to be baked, and means for introducing hot air into the baking chamber so as to sweep the products on the trolley, said means comprising a hot air distributor in each of the four corners of said baking chamber, each of said hot air distributors comprising a rotatable vertical hollow cylinder having a slot along a generatrix of the cylinder, means for rotating said distributors about their vertical



axes, and means for supplying hot air to each of said distributors, such hot air flowing through said slots and being thereby directed onto said products on the shelves of said trolley.

4,322,205

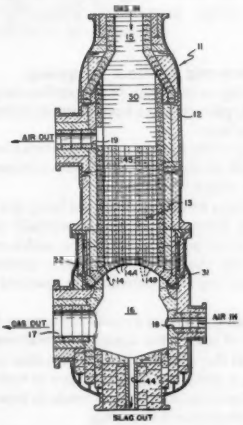
REGENERATIVE AIR HEATER

Paul B. Hasselquist, Maple Grove, and Richard Baldner, Minnetonka, both of Minn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 26, 1980, Ser. No. 210,486

Int. Cl.³ C21B *9/00*; F24H *7/00*; F23L *15/02*

U.S. Cl. 432—214 **10 Claims**



1. In a regenerative air heater assembly, including a containment vessel within which is a vertically positioned cored-brick matrix, a cylindrical ceramic brick liner, one or more cylindrical ceramic brick liner, one or more cylindrical insulating brick rings, a refractory brick support dome beneath said matrix for supporting the same and partially defining a lower chamber beneath the brick dome provided with inlet and outlet passages for alternating direct combustion air and combustion gases through said matrix for preheating said combustion air and for removing waste, and a matrix support means for said matrix, said liner and said brick rings, the improvement in said support means comprising:

a generally cylindrical upright main wall of stainless steel composition and of a cylindrical length sufficient to provide a gradual temperature gradient between said matrix support means and the containment vessel wall;

support ring means integral with and extending inwardly from the bottom of said cylindrical wall and including an inclined bearing wall facing upwardly and inwardly of said main wall;

a retaining lip extending inwardly from said support ring;

said main wall, support ring and retaining lip being positioned within the walls of said containment vessel near the bottom of the vessel such that said lip and said bearing wall provide structural support for the retention of said refractory brick dome by virtue of the hoop strength of the support ring, cylindrical main wall and retaining lip, and said cylindrical main wall, flange, and ring cooperate in the support of said matrix, said liner, and said brick rings whereby said matrix support means equalizes thermal expansion and contraction between said support ring means, said matrix and said support dome.

4,322,206

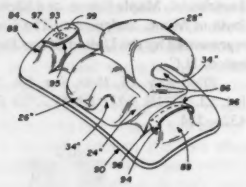
ORTHODONTIC APPLIANCE

James M. Reynolds, Lubbock, Tex., assignor to Zulauf Inc., Lubbock, Tex.

Continuation-in-part of Ser. No. 930,577, Aug. 3, 1978, Pat. No. 4,216,583. This application Apr. 11, 1980, Ser. No. 139,202

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—9 **31 Claims**



1. An orthodontic appliance comprising:

a base having an inwardly facing surface adapted for attaching the appliance and a body portion extending outwardly from the base;

said body portion having a length substantially shorter than the length of the base and a width substantially narrower than the width of the base;

a pair of wings extending from the body portion of said base and each having a length substantially shorter than the length of the body portion and a width substantially narrower than the width of the body portion and defining wire receiving slots between the base and the ends of said wings;

the wings tapering from a relatively narrow incisal surface at one end of one of the wings to a relatively wide gingival surface at the opposite end of the other wing, said wings forming a gentle wedge-like shape in both the length and width directions so that food tends to move past the appliance during patient chewing;

the wing having the gingival surface defining a relatively larger slot than the wing with the incisal surface to prevent impingement of gingival tissue;

a slot extending lengthwise between the wings and into the body portion and dimensioned to receive therein a dental appliance of predetermined dimensions;

at least one pad extending from the base at a predetermined spaced apart distance from said body portion for interacting with said dental appliance and inducing rotation in the tooth to which said appliance is attached; and

said pad and said wings defining an outwardly facing domed surface which is entirely curved in both the length and width direction presenting a comfortable surface to the mouth tissue of the patient characterized by an absence of angular edges.

4,322,207

DENTAL CLEANING SLURRY

Erik H. Madsen, 2405 Camino Way, Salt Lake City, Utah 84121

Filed Jan. 26, 1976, Ser. No. 652,566

Int. Cl.³ A61K *5/00*

U.S. Cl. 433—216 **13 Claims**

1. A hygienic slurry for the cleaning of teeth comprising an aqueous solution having suspended therein inert particulate materials having a Knoop hardness of less than 68 which are softer than the outer surface of the teeth.

4,322,208

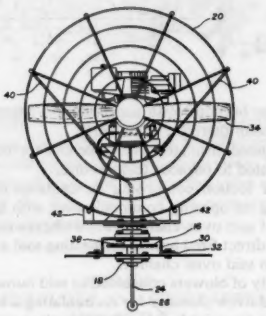
SWIVEL MOUNTED PROPULSION AND STEERING APPARATUS

Thomas G. Kelpin, Shreveport, La., assignor to Beloit Corporation, Beloit, Wis.

Continuation of Ser. No. 949,636, Oct. 10, 1978, abandoned. This application Sep. 12, 1980, Ser. No. 186,436

Int. Cl.³ B60F *3/00*

U.S. Cl. 440—37 **3 Claims**



1. Apparatus for providing fluid propulsion and steering in any direction to a craft having operator throttle and steering controls, comprising, in combination:

an engine having a throttle for controlling its speed;

means for mounting the engine to the craft to swivel about a substantially vertical axis for unencumbered angular rotational movement thereabout, including more than 360° in either direction from any starting point along the path of rotation;

an aerodynamic propeller;

a centrifugal clutch operatively attaching the propeller to the engine whereby the propeller is selectively disengaged and engaged to provide propulsive force as a function of engine speed;

linkage means secured to the means for mounting the engine to the craft and adapted to be operatively connected to the operator steering control whereby the engine and propeller can be angularly positioned from any location to steer the craft;

a throttle control cable having two segments with one end of one segment attached to the engine throttle and one end of the other segment connected to the operator throttle control;

a universal coupling interposed between the segmented sections of the throttle control cable, said coupling having a body member and a head member rotatably secured in the body member for unrestrained rotation therein, the head member being connected to one end of the throttle control cable segment and the other throttle control cable segment attached to the body member with the other end of each segment attached to the operator throttle control

and throttle, to thereby permit unlimited rotation of the head member corresponding to unlimited angular rotation of the means for mounting the engine to the craft in either direction to maintain and facilitate control of the engine speed and steering of the craft.

4,322,209

DERAILLEUR WITH IMPROVED MECHANISM FOR MOVING AND RETAINING A MOVABLE MEMBER TO AND IN A DESIRED SPEED CHANGE STAGE

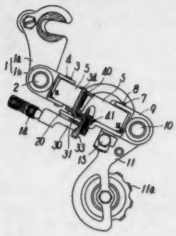
Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Filed May 12, 1980, Ser. No. 148,805

Claims priority, application Japan, May 24, 1979, 54-65345; May 24, 1979, 54-65346

Int. Cl.³ F16H *7/22, 9/06, 11/08*

U.S. Cl. 474—82 **16 Claims**



1. In a derailleur for a bicycle comprising four members, a fixing member, two linkage members pivoted to said fixing member, and a movable member mounting a chain guide and pivoted to said linkage members, and a return spring carried between two of said four members, so that the cooperative operation of a control cable and the action of said return spring enables said movable member to reciprocate with respect to said fixing member for changing the bicycle speed, the improvement comprising:

a control element for setting said movable member in one of a plurality of predetermined positions corresponding to speed change stages, said control element being supported to one of said four members and having a plurality of engageable portions corresponding to each speed change stage defined by reciprocation of said movable member, said engageable portions having engaging faces for each speed change stage and connecting faces for interconnecting said engaging faces;

a retainer engageable with one of said engaging faces at said engageable portions of said control element for retaining said movable member in a proper position corresponding to a desired speed change stage, said retainer being supported swingably to another member of said four members which is relatively movable with respect to said one member carrying said control element, said retainer supporting one end of said control cable, said retainer, when said control cable is operated to move said movable member forward with a stroke of said cable less than a given length, being retained in engagement with one of said engageable portions at said control element and, when said cable imparts a stroke over said given length, disengaging from said engageable portions;

a tension spring for continuously biasing said control cable in the direction of stretching said cable, said tension spring having one working end, said working end engaging with said retainer to bias said retainer in the direction of disengaging from each of said engageable portions; and,

an energy conservation spring for conserving energy when said control cable is pulled against said return spring to swing said retainer, said energy conservation spring having first and second working ends, said first working end engaging with said retainer, said second working end engaging with one of said four members, so that when said control cable is pulled to swing said retainer to disengage the same from said engageable portions, the energy conserved in said energy conservation spring causes said movable member to move rapidly.

4,322,210

AUXILIARY, AND PROCESS, FOR THE SOAKING OF HIDES

Erwin Hahn, Heidelberg; Dietrich Lach, Friedelsheim, and Rolf Streicher, Worms, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 8, 1980, Ser. No. 176,684

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2938078

Int. Cl.³ C14C *1/04, 1/08*

U.S. Cl. 8—94.18 12 Claims

1. A mixture for soaking hides and skins comprising:

(a) a salt of formula I

$$M^+[O_3S—S—R]^- \quad (I)$$

wherein R is an aliphatic or araliphatic radical of 1 to 8 carbon atoms which may be unsubstituted or may be substituted with one or more carboxyl, carboxylate, hydroxyl, nitrile, or amide functional groups and M^+ is a cation;

(b) a surfactant; and

(c) a bactericide.

4,322,211

DEVELOPMENT OF COLOR IN WOOD WITH AMINOBENZENESULFONYL AZIDES

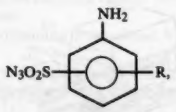
Charles E. Hoyle, and Ronald S. Lenox, both of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed May 20, 1981, Ser. No. 265,602

Int. Cl.³ B27K *5/02*

U.S. Cl. 8—402 8 Claims

1. A method of photolytically developing walnut wood color on a wood sample, which comprises treating the sample by contacting the surface area thereof with an acidic solution comprising water and a salt of an aminobenzenesulfonyl azide of the formula



wherein R is H, a C_1–C_4 alkoxy group or a C_1–C_4 alkyl group, and exposing the treated sample to a light source to thereby develop a walnut color on the sample.

4,322,212

OXIDATION HAIR DYES COMPRISING SUBSTITUTED BENZOTRIAZOLES

Günther Konrad, Hilden, and Edgar Lieske, Düsseldorf, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

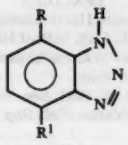
Filed Nov. 24, 1980, Ser. No. 209,585

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950032

Int. Cl.³ A61K *7/13*

U.S. Cl. 8—407 11 Claims

1. A composition of the developer-coupler type for the dyeing of human hair, consisting essentially of at least one substituted benzotriazole of the formula



wherein R and R^1 each respresent a hydrogen atom or an amino group, with the proviso that at least one of R and R^1 is an amino group, an adduct thereof with from 1 to 4 moles of ethylene oxide per mole of substituted benzotriazole, or a salt thereof, as coupling component, and, as developer component, one or more of the conventional developer components used in oxidation dyes, the molar ratio of the coupler to the developer being from 2:1 to 1:2.

8. The composition of claim 1, wherein the developer component comprises one or more compunds selected from the group consisting of

p-toluylene diamine,
2,4,5,6-tetraaminopyrimidine,
4,5-diamino-2,6-bismethylaminopyrimidine,
2,5-diamino-4,6-bismethylaminopyrimidine,
4,5-diamino-6-butylamino-2-dimethylaminopyrimidine,
2,5-diamino-4-diethylamino-6-methylaminopyrimidine,
4,5-diamino-6-diethylamino-2-dimethylaminopyrimidine,
4,5-diamino-2-diethylamino-6-methylaminopyrimidine,
4,5-diamino-2-dimethylamino-6-ethylaminopyrimidine,
4,5-diamino-2-dimethylamino-6-isopropylaminopyrimidine,
4,5-diamino-2-dimethylamino-6-methylaminopyrimidine,
4,5-diamino-6-dimethylamino-2-methylaminopyrimidine,
4,5-diamino-2-dimethylamino-6-propylaminopyrimidine,
2,4,5-triamino-6-dimethylaminopyrimidine,
4,5,6-triamino-2-dimethylaminopyrimidine,
2,4,5-triamino-6-methylaminopyrimidine,
4,5,6-triamino-2-methylaminopyrimidine,
4,5-diamino-2-dimethylamino-6-piperidinopyrimidine,
4,5-diamino-6-methylamino-2-piperidinopyrimidine,
2,4,5-triamino-6-piperidinopyrimidine,
2,4,5-triamino-6-anilinopyrimidine,
2,4,5-triamino-6-benzylaminopyrimidine,
2,4,5-triamio-6-benzylidenaminopyrimidine,
4,5,6-triamino-2-piperidinopyrimidine,
2,4,6-trismethylamino-6-aminopyrimidine,
2,4,5-triamino-6-di-n-propylaminopyrimidine,
2,4,5-triamino-6-morpholinopyrimidine,
2,5,6-triamino-4-dimethylaminopyrmidine,
4,5,6-triamino-2-morpholinopyrimidine,
2,4,5-triamino-6-β-hydroxyethylaminopyrimidine,
4,5,6-triamino-2-β-amino-ethylaminopyrimidine,
2,5,6-triamino-4-β-methylamino-ethylaminopyrimidine,
2,5-diamino-4,6-bis-gamma-diethylamino-propylaminopyrimidine,
4,5-diamino-2-methylamino-6-β-hydroxy-ethylaminopyrimidine,
5-amino-2,4,5-triethylaminopyrimidine,
2,4-bis-β-hydroxyethylamino-6-anilino-5-aminopyrimidine,
N,N-bis-(2-hydroxyethylamino)-m-phenylenediamine,
2-methylamino-4,5,6-triaminopyrimidine,
1-phenyl-3-carbamoyl-4-aminopyrazolone,
2,5-diaminoanisole, and
2-chloro-p-phenylenediamine.

10. A process for the dyeing of hair comprising applying to said hair, at temperatures ranging substantially from about 15° and 40° C. at a pH of from about 8 to 10 for a time sufficient to effect dyeing through oxidation, an effective amount of the aqueous developer-coupler composition according to claim 8.

4,322,213

PROCESS FOR THE PRODUCTION OF RESERVE EFFECTS ON POLYESTERCELLULOSE MIXED FIBER TEXTILES

Horst Tappe, Dietzenbach; Horst Kindler, Frankfurt am Main; Kurt Roth, and Sien L. Ong, both of Hofheim, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 18, 1981, Ser. No. 264,719

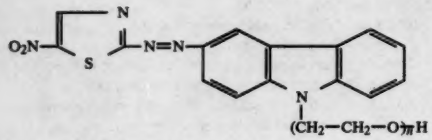
Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019726

Int. Cl.³ D06P 5/12

U.S. Cl. 8—449 9 Claims

1. In the process for production of resist effects on textile materials of mixed fibers of polyester and cellulose comprising impregnating the materials with a dye liquor containing dischargeable disperse dyestuffs and dischargeable reactive dyestuffs which react with the resisting agents, drying or partially drying the materials and subsequently printing a resist paste on the materials, and heat-treating the materials at temperatures of 100° to 190° C.,

the improvement comprises said dischargeable disperse dyestuffs are of the formula



wherein n is a number from 1 to 9;

said dischargeable reactive dyestuffs being those containing reactive moieties of the formula

$-SO_2-CH_2-CH_2-hal$,

$-SO_2-CH_2-CH_2-O-SO_3M$,

$-NH-SO_2-CH_2-CH_2-O-SO_3M$ or

$-SO_2-CH=CH_2$

wherein M is hydrogen or a metal cation and hal is halogen; and

the resist paste contains an alkali metal sulphite or an alkali metal bisulphite in combination with an alkali metal carbonate or alkali metal bicarbonate.

4,322,214

DYEING METHOD

Osamu Manabe, Osaka; Masayasu Utsunomiya, Ashiya; Morihiro Kamiyama, Ibaragi; Michiaki Tsutsui, and Masayuki Matsumoto, both of Osaka, all of Japan, assignors to Asahi Chemical Company Limited, Osaka, Japan

Filed Apr. 9, 1980, Ser. No. 138,265

Claims priority, application Japan, Apr. 18, 1979, 54/48171; May 25, 1979, 54/65313

Int. Cl.³ C09B 49/00; D06P 1/30

U.S. Cl. 8—582 9 Claims

1. In a method of dyeing a textile material wherein the textile material is dyed in an alkaline dye bath using a sulfur dye or sulfurized vat dye, the improvement which comprises the dye bath containing an organic sulfur-containing compound selected from the group consisting of organic mercapto compounds having at least one $-SM_1$ group wherein M_1 is a hydrogen atom or an alkali metal atom, organic sulfur compounds capable of generating mercapto groups under dyeing conditions and combinations thereof and a sulfite salt compound wherein said organo sulfur-containing compound is present in a concentration of about 0.1 to about 20 g/l and the concentration of said sulfite salt compound is about 1 to 100 g/l.

4,322,215

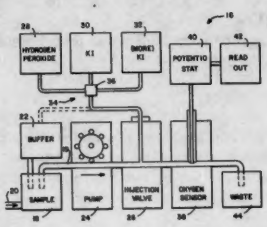
METHOD FOR DETERMINING PARTICULAR SPECIES OF CHLORINE IN A WATER SAMPLE

Calvin O. Huber, Mequon; Karl G. Schick, Whitefish Bay, and Joel T. Coburn, Milwaukee, all of Wis., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 23, 1980, Ser. No. 200,046

Int. Cl.³ G01N 7/00

U.S. Cl. 23—230 R 18 Claims



1. A method for determining a particular specie of chlorine in a water sample, said method comprising the steps of: providing said sample at a pH within a specific range; adding a predetermined amount of hydrogen peroxide to said sample for causing the latter to react with said chlorine specie if present to produce oxygen; and detecting said oxygen if produced for indicating the presence of said specie.

4,322,216

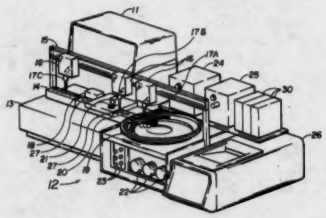
METHOD AND APPARATUS FOR POSITIONING CARS IN A SAMPLE HANDLING APPARATUS

John E. Lillig, Diamond Bar; Robert K. Neeper, Yorba Linda, and Paul J. Ashton, Riverside, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 26, 1981, Ser. No. 238,306

Int. Cl.³ G01N 1/10, 1/14

U.S. Cl. 23—230 R 8 Claims



2. A method for positioning a plurality of cars on a single track, each said car driven by a stepper motor, said track terminating in two ends and including a plurality of apertures between said ends, at least some of said apertures being of predetermined different width and having predetermined different sized spaces between said apertures, said method comprising the steps of:

advancing each said car to its reference position adjacent said ends;

driving said cars away from said ends;

sensing said apertures and said spaces on said track simultaneously with said step of driving;

counting said apertures and said steps of said stepper motor simultaneously with said step of sensing; and

stopping each said car at a predetermined position determined by the number of apertures and spaces passed and the number of steps counted.

4,322,217
PROCESS FOR PREPARING LIMULUS LYSATE

Roxane N. Dikeman, Creve Coeur, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

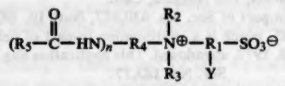
Continuation-in-part of Ser. No. 163,456, Jun. 27, 1980, abandoned. This application Apr. 14, 1981, Ser. No. 254,233

Int. Cl.³ G01N *31/00, 33/00*

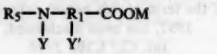
U.S. Cl. 23—230 B **28 Claims**

1. A process for treating under lysate treating conditions Limulus amebocyte lysate having decreased sensitivity to endotoxin due to the presence of an endogenous lysate inhibitor prior to any subsequent reaction with endotoxin with an enhancing amount of a lysate sensitivity enhancing agent having lysate sensitivity enhancing characteristics to neutralize or partially neutralize said lysate inhibitor thereby increasing the lysate sensitivity to endotoxin, said lysate enhancing agent being selected from the group consisting of

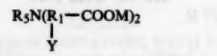
(I) amphoteric surfactants having the following formulae:



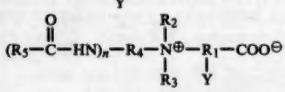
(A)



(B)



(C)



(D)

wherein

R_1 is an alkylene radical having from 1 to 4 carbon atoms;

Y and Y' are each (1) hydrogen, (2) lower alkyl or (3) hydroxy lower alkyl;

R_2 and R_3 are each (1) lower alkyl or (2) hydroxy lower alkyl;

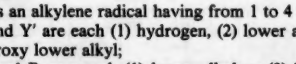
n is 0 or 1, when n is 0, R_4 is alkyl containing from about 8 to about 18 carbon atoms;

when n is 1, R_4 is an alkylene radical having from 1 to about 6 carbon atoms;

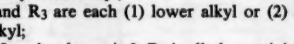
R_5 is an alkyl containing from about 8 to about 18 carbon atoms;

M is hydrogen, sodium, potassium or ammonium;

(II) anionic surfactants have the following formulae:



(E)



(F)

wherein

R_5, Y and M have the same meaning as set forth above

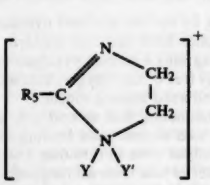
R_6 is an alkyl from 8 to 24 carbon atoms

n_1 is an integer from 1 to 3

n_2 is 1 or 2

Ar is phenyl or naphthyl;

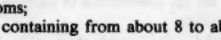
(III) cationic surfactants having the following formula:



wherein

R_5, Y and Y' have the same meaning as set forth above; and

(IV) nonionic surfactants having the following formula:



(H)

wherein

R_5 has the same meaning as set forth above

R_7 and R_8 are each methyl or ethyl; and those nonionic surfactants selected from the group consisting of the condensation product of about 10 to 30 moles of ethylene oxide with the monoester of a hexahydric alcohol containing 6 carbon atoms with the ester group containing 10 to 20 carbon atoms.

4,322,218
SO_2 CAPTURE-COAL COMBUSTION

Kenzie Nozaki, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 30, 1980, Ser. No. 154,637

Int. Cl.³ C10L *9/02*

U.S. Cl. 44—1 SR **16 Claims**

1. In a process for the combustion of coal wherein a particulate coal is combusted with an oxygen-containing gas in the presence of a particulate calcium-containing material, the improvement comprising increasing the capture efficiency of the calcium-containing material by carrying out the combustion in the presence of an effective amount of a tin-containing material.

12. In a process for the combustion of coal wherein a particulate coal is combusted with an oxygen-containing gas in the presence of a particulate calcium-containing material, the improvement comprising carrying out the combustion in the presence of an additive mixture comprising SnO, Cr_2O_3, and BaO, the ratio of $SnO:Cr_2O_3:BaO$ being from 0.2 to 1:1:0.05 to 0.3, and the additive mixture being present in an amount sufficient to improve the capture efficiency of the calcium-containing material.

4,322,219
MOISTURE REDUCTION

Edward J. Burns, Omaha, Nebr., assignor to InterNorth, Inc., Omaha, Nebr.

Filed Mar. 2, 1981, Ser. No. 239,411

Int. Cl.³ C10L *9/10*

U.S. Cl. 44—6 **9 Claims**

1. A method for reducing the moisture content of coal which comprises contacting the coal with an aqueous composition comprising at least about 0.1 percent of polyethylene oxide with a molecular weight of at least about 200,000 and then evaporating the water whereby at least about one gram of polyethylene oxide per 1000 grams of coal is deposited upon the coal.

4,322,220
MULTIPURPOSE HYDROCARBON FUEL AND LUBRICATING OIL ADDITIVE

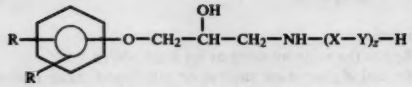
Warren H. Machleder, Blue Bell, and Joseph M. Bollinger, North Wales, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 671,462, Mar. 29, 1976, Pat. No. 4,048,081, which is a continuation-in-part of Ser. No. 536,074, Dec. 24, 1974, abandoned. This application Jul. 5, 1977, Ser. No. 813,027

Int. Cl.³ C10M *1/22, 1/34;* C10L *1/18;* C07C *93/06*

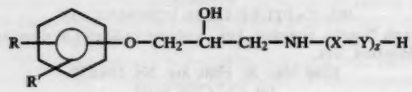
U.S. Cl. 44—75 **5 Claims**

1. A mineral oil composition comprising a mixture of hydrocarbons boiling in the range of about 80° to 1000° F. containing an effective detergent amount of a compound represented by the formula:



in which R is a hydrocarbon radical having a molecular weight ranging from about 200 to 1500, R' is hydrogen or an alkyl radical having from 1 to 4 carbon atoms, X is a divalent hydrocarbon radical having from 2 to 6 carbon atoms, Y is NH or O, and z has a value from 1 to 10.

5. The compound represented by the formula

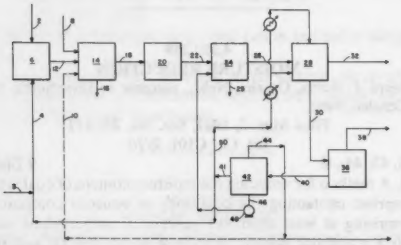


in which R is a hydrocarbon radical having a molecular weight ranging from about 200 to 1500, R' is hydrogen or an alkyl radical having from 1 to 4 carbon atoms, X is a divalent hydrocarbon radical having from 2 to 6 carbon atoms, Y is NH or O, and z has a value from 1 to 10.

4,322,221
PROCESS FOR THE SUPERATMOSPHERIC GASIFICATION OF SOLID CARBONACEOUS MATERIALS

John F. Kamody, Irwin, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 64,762, Aug. 8, 1979, abandoned. This application Aug. 21, 1980, Ser. No. 180,124
Int. Cl.³ C10J 3/00
U.S. Cl. 48—197 R 12 Claims



1. In a process for gasifying solid carbonaceous material at elevated temperature and pressure to produce a gas containing carbon monoxide and hydrogen, the improvement which comprises forming a slurry at atmospheric pressure of the carbonaceous material with carbon disulfide and raising said formed slurry to a pressure of at least the gasification pressure and simultaneously vaporizing the carbon disulfide and gasifying said carbonaceous material.

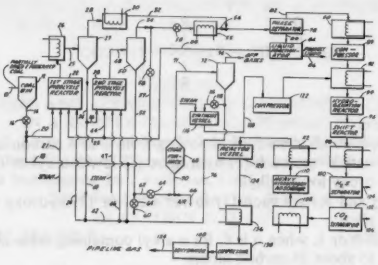
11. A process for the superatmospheric gasification of a solid carbonaceous material which comprises:

(a) forming a slurry of said carbonaceous material at atmospheric pressure with a recycle fluid consisting of carbon disulfide, carbon tetrachloride, trichloroethylene, bromoethane, chlorobenzene, methane dichloride or chloroform, or mixture of these compounds;
(b) pumping said slurry to a pressure of at least the gasification pressure;
(c) gasifying the carbonaceous material and simultaneously evaporating said recycle slurrying fluid within a gasifier;
(d) scrubbing the resultant product gas with a chilled solution of scrubbing fluid which is essentially the same as said recycle fluid, thereby condensing said evaporated recycle fluid while simultaneously condensing water vapor from said product gas, absorbing sulfur compounds and other soluble compounds from said product gas, and physically removing particulates from said product gas;
(e) treating said scrubbing fluid to remove accumulated particulates and sulfur compounds;
(f) separating said scrubbing fluid from said condensed water;
(g) forming a recycle fluid from a portion of the scrubbing fluid; and
(h) recycling the recycle fluid to step (a), whereby substantially no reaction of recycle fluid occurs when gasifying the carbonaceous material.

4,322,222
PROCESS FOR THE GASIFICATION OF CARBONACEOUS MATERIALS

Allan Sass, Los Angeles, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 630,557, Nov. 10, 1975, Pat. No. 4,229,185, which is a continuation-in-part of Ser. No. 292,883, Sep. 28, 1972, abandoned. This application Sep. 3, 1980, Ser. No. 183,777
The portion of the term of this patent subsequent to Oct. 21, 1997, has been disclaimed.
Int. Cl.³ C10J 3/46
U.S. Cl. 48—197 R 32 Claims



1. A process for the gasification of particulate carbonaceous material comprising:

(a) introducing into a first pyrolysis zone a particulate carbonaceous feed material, a first gas which is substantially free of free oxygen, and a first solid heating media;
(b) rapidly conducting said first gas, said first solid heating media, and said particulate carbonaceous feed material through said first pyrolysis zone in turbulent entrained flow for the rapid transfer of heat from said first solid heating media to said particulate carbonaceous feed material to at least partially gasify said particulate carbonaceous feed material and produce a first gaseous product comprising lower hydrocarbon gases having from one to four carbon atoms and a first char product, to thereby produce a first mixture of first solids comprising said first solid heating media and said first char product, and first fluids comprising said first gas and said first gaseous product;
(c) separating by the use of a first cyclone at least a part of said first solids from said first mixture;
(d) introducing into a second pyrolysis zone, a second gas substantially free of free oxygen, said separated first solids, and a second solid heating media;
(e) rapidly conducting said second gas, said separated first solids, and said second solid heating media through said second pyrolysis zone in turbulent entrained flow for the rapid transfer of heat from said second solid heating media to said separated first solids to at least partially gasify said separated first solids and produce a second gaseous product comprising hydrogen and carbon monoxide and a second char product, to thereby produce a second mixture

of second solids comprising said first solid heating media, said second char product, and said second solid heating media, and second fluids comprising said second gas and said second gaseous product, said second gaseous product being produced at least in part directly from the devolatilization of the remaining volatilizable matter in said first char product in said separated first solids, while maintaining said second pyrolysis zone free of free oxygen by preventing free oxygen from being introduced into said second pyrolysis zone;

(f) removing essentially all gases and solids from said second pyrolysis zone in a single entrained stream, and separating by the use of a second cyclone at least a part of said second solids from said second mixture;

(g) heating said separated second solids by combustion with a gas comprising free oxygen to a first heating temperature high enough to impart to same sufficient thermal energy to form a heated solid heating media and a combustion gas;

(h) separating by the use of a third cyclone at least a part of said heated solid heating media from said combustion gas; and

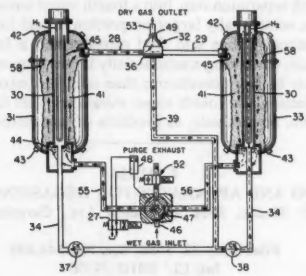
(i) recycling at least a part of said separated heated solid heating media to at least one of said pyrolysis zones as said first or second solid heating media.

4,322,223

ADSORBENT FRACTIONATORS WITH ELECTRONIC SEQUENCE TIMER CYCLE CONTROL AND PROCESS

Conrad Christel, Jr., Ithaca, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Mar. 30, 1979, Ser. No. 25,510
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—18 **19 Claims**



1. A gas fractionating apparatus comprising as the essential components at least one sorbent bed adapted for alternate periodic stagewise cyclic adsorption and regeneration; at least one solenoid valve movable between positions permitting and closing off the gas flow through the bed or beds during the stages of the adsorption and regeneration cycle; a driver for the solenoid valve; and an electronic sequence timer that times the cycling of the bed for adsorption and regeneration in a series of fixed time intervals that are the same for each cycle in sequence and are determined electronically and comprise, in combination, digital integrated circuitry including a time delay oscillator generating electric impulses at selected time intervals; a binary counter receiving and counting the electric pulses from the oscillator and storing information therein in multiples of the time intervals; and a logic module having a plurality of logic gates interpreting and responding to selected output combinations from the counter corresponding to desired fixed time intervals for the stages of the adsorption and regeneration cycle of the gas fractionating apparatus, the logic module being in operative connection with the driver for the solenoid valve, and controlling the gas flow through the adsorbent gas fractionator system according to said electronically determined fixed cycling time intervals.

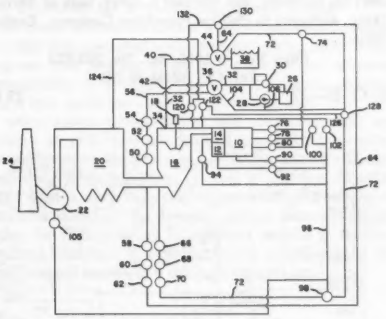
15. A process for reducing the concentration of one or more first gases in a mixture thereof with a second gas to below a limiting maximum concentration thereof in the second gas, by passing the mixture in contact with and from one end to another end of one of two beds of a sorbent having a preferential affinity for the first gas, adsorbing first gas thereon to form a gaseous effluent having a concentration thereof below the maximum, and forming a concentration gradient of first gas in the bed progressively decreasing from one end to the other end as the adsorption continues and an increasing concentration of first gas in the bed defining a concentration front progressively advancing in the bed from the one end to the other end as sorbent capacity therefor decreases; and then while passing a purge flow of gaseous effluent through the other of the two beds of sorbent to desorb first gas adsorbed thereon, and reverse the advance of the concentration front of first gas in the bed, regenerating the other bed for another cycle of adsorption; periodically interchanging the beds so that alternately one bed is on regeneration and the other on the adsorption portions of the cycle; timing the cycling in fixed timing intervals that are the same for each cycle in sequence and are determined electronically by a combination of digital integrated circuitry including a time delay oscillator generating electric impulses at selected time intervals; a binary counter receiving and counting the electric pulses from the oscillator and storing information therein in multiples of the time intervals; and a logic module having a plurality of logic gates interpreting and responding to selected output combinations from the counter corresponding to desired fixed time intervals for the stages of the adsorption and regeneration cycle of the gas fractionating apparatus, and controlling cycling time at a period not shorter than the regeneration time; and switching the sorbent beds at the end of such cycling time.

4,322,224

SPRAY ABSORBER CONTROL SYSTEM AND METHOD

Alfred H. Roth, Annville, Pa., assignor to General Electric Co., Lebanon, Pa.

Filed Oct. 29, 1980, Ser. No. 202,175
Int. Cl.³ B01D *47/06*
U.S. Cl. 55—20 **11 Claims**



1. A control system for preventing downstream condensation in a spray absorber unit of the type having a dry spray scrubbing absorber, upstream and downstream combustion gas flow passages leading to and from the absorber, a sorbent source for supplying sorbent to the absorber, a dilution liquid source for supplying dilution liquid to the absorber, a contaminant control for increasing or decreasing the flow of sorbent to the absorber in response to the contaminant concentration in the gas downstream of the absorber, and a temperature control for increasing or decreasing the flow of dilution liquid to the

absorber in response to the temperature of the gas downstream of the absorber, wherein the improvement comprises:

a. A partial absorber shutdown control having a feed-forward sensor in the upstream gas flow passage monitoring the liquid vapor concentration of the gas upstream of the absorber, a shutoff valve in the dilution liquid supply, an operative connection between the sensor and the shutoff valve, the sensor including a switch actuated when the liquid vapor concentration exceeds a present value to transmit a signal to the valve through the operative connection and thereby close the valve and shut off the flow of dilution liquid to the absorber; and

b. A complete absorber shutdown control including a complete shutdown sensor operable to detect upsets or failures affecting the combustion gas sufficiently severely that continued operation of the absorber would risk condensation formation downstream of the absorber, a shutoff valve in the sorbent source, an operative connection between the complete shutdown sensor and the valves in both sources, the complete shutdown sensor including a switch actuated in response to an upset or failure to transmit a signal to both valves through such operative connection to close the valves and shut off the flow of both sorbent and dilution liquid to the absorber.

7. The method of controlling a dry spray absorber of the type using sorbent and dilution liquid in a combustion gas decontamination process comprising the steps of:

a. Supplying sorbent to the absorber in response to the concentration of a contaminant in the combustion gas during normal operation and partial shutdown

b. Supplying dilution liquid to the absorber in response to the temperature of the combustion gas during normal operation;

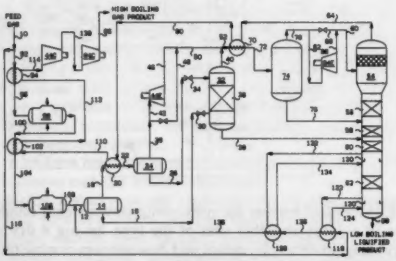
c. Partially shutting down the absorber by reducing the supply of dilution liquid to the absorber when the concentration of liquid vapor in the combustion gas upstream of the absorber exceeds a value otherwise likely to produce condensation downstream of the absorber; and d. Completely shutting down the absorber by stopping the supply of both dilution liquid and sorbent to the absorber in response to upsets or failures indicative of changes in the combustion gas otherwise likely to produce condensation downstream of the absorber.

4,322,225

NATURAL GAS PROCESSING

Robert M. Bellinger, and Michael L. Gray, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 4, 1980, Ser. No. 203,922
Int. Cl.³ B01D *35/00*
U.S. Cl. 55—27 **29 Claims**



1. A method for separating higher boiling constituents from a normally gaseous feed mixture containing lower boiling constituents and said higher boiling constituents, at a temperature near atmospheric temperature and at a first elevated pressure substantially above atmospheric pressure, comprising:

(a) cooling said feed mixture, in a first cooling stage, to a first reduced temperature sufficiently low to liquefy a portion of said feed mixture;

(b) separating the thus cooled feed mixture, in a first separation step, into a first vapor stream and a first liquid stream;

(c) cooling said first vapor stream, in a second cooling stage, to a second reduced temperature sufficiently low to liquefy a portion of said first vapor stream;

(d) separating the thus cooled first vapor stream, in a second separation step, into a second vapor stream and a second liquid stream;

(e) reducing the pressure of said first liquid stream, in a first pressure reduction step, to a second elevated pressure substantially above atmospheric pressure but sufficiently low to flash a portion of said first liquid stream;

(f) reducing the pressure of said second liquid stream, in a second pressure reduction step, to a third elevated pressure substantially above atmospheric pressure and approximately equal to said second elevated pressure but sufficiently low to flash a portion of said second liquid stream;

(g) simultaneously separating the thus reduced-pressure, first liquid stream, in a lower portion of a third separation step, and the thus reduced-pressure, second liquid stream, in an upper portion of said third separation step, into a third vapor stream and a third liquid stream;

(h) expanding at least a portion of said second vapor stream, in an expansion stage, to a fourth elevated pressure substantially above atmospheric pressure and approximately equal to said second and said third elevated pressures but sufficiently low to liquefy a portion of said at least a portion of said second vapor stream;

(i) simultaneously separating the thus expanded at least a portion of said second vapor stream, the remaining portion, if any, of said second vapor stream and said third vapor stream, in an upper portion of a fourth separation step, and said third liquid stream, in a portion of said fourth separation step below said upper portion of said fourth separation step, into a fourth vapor stream, containing a substantially larger proportion of said lower boiling constituents than said feed mixture, and a fourth liquid stream, containing a substantially larger proportion of said higher boiling constituents than said feed mixture; and

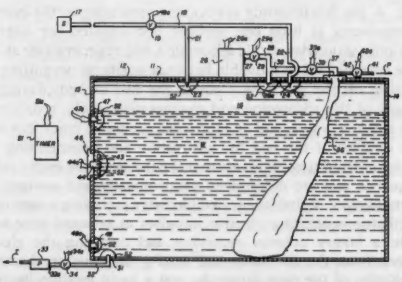
(j) collecting said fourth vapor stream and said fourth liquid stream, respectively, as products of said method.

4,322,226

METHOD AND APPARATUS FOR DEGASSING FLUIDS

Donald P. Hudec, 5601 Manzanita Ave., Carmichael, Calif. 95608

Filed May 12, 1980, Ser. No. 148,838
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—41 **12 Claims**



12. A method of degassing a liquid such as water comprising the steps of,

positioning a flexible bag of airtight material in a receptacle interior,

evacuating the interior of said bag to collapse said bag,

introducing water into said receptacle interior to a predetermined level,

applying a vacuum to said receptacle interior during said water introducing step to degas said water,

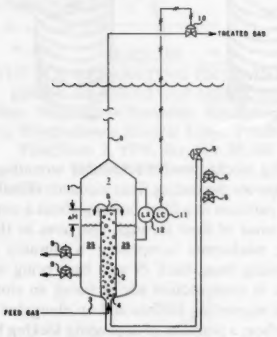
removing said degassed water from said receptacle interior, and

venting said bag interior to the atmosphere to permit said bag to expand during said water removing step to compensate for the vacuum in said receptacle interior.

4,322,227
GAS PURIFICATION

Charles F. Cook, and George E. Hays, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 4,789, Jan. 19, 1979, Pat. No. 4,239,510. This application Apr. 28, 1980, Ser. No. 140,629
The portion of the term of this patent subsequent to Dec. 16, 1997, has been disclaimed.
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—68 **5 Claims**



1. A process for removing at least one impurity from a gas comprising

(a) withdrawing natural gas containing 10 volume percent or more carbon dioxide from a natural gas well,

(b) passing the natural gas into an absorber located at or near the bottom of the ocean, wherein the pressure inside said absorber is approximately equal to the pressure of the ocean surrounding said absorber,

(c) withdrawing sea water from the ocean in the vicinity of said absorber and introducing the sea water withdrawn into said absorber,

(d) contacting said natural gas in said absorber with said sea water withdrawn to produce purified natural gas with reduced carbon dioxide content as compared to the natural gas coming from said well and CO_2-rich sea water,

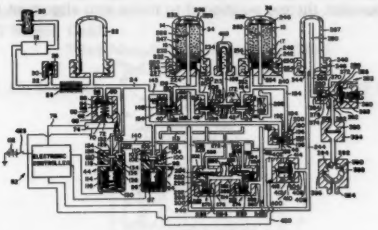
(e) accumulating said purified natural gas near the top of said absorber for recovery,

(f) and recovering said purified natural gas from said absorber.

4,322,228
PNEUMATICALLY ACTUATED ELECTRONIC CONTROL FOR A FLUID MIXTURE ADSORPTION SEPARATOR

William P. Myers; Terence A. Torzala, and John W. Henneman, all of Davenport, Iowa, assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 24,935, Mar. 29, 1979, abandoned, which is a continuation of Ser. No. 839,966, Oct. 6, 1977, abandoned. This application Aug. 18, 1980, Ser. No. 179,138
Int. Cl.³ B01D *53/00*
U.S. Cl. 55—163 **33 Claims**



1. In a breathing system wherein a breathable fluid is separated from a source of fluid mixture through the retention of at least one element in the fluid mixture by an adsorption material located in first and second chambers, control means for regulating the sequential communication of the fluid mixture to the first and second chambers comprising:

a supply conduit for communicating the fluid mixture from the source to said first and second chambers, the pressure of the fluid mixture in said supply conduit varying with the rate of flow and adsorption of the element of the fluid mixture in said first and second chambers;

first transducer means connected to said supply conduit and responsive to a predetermined fluid pressure in the fluid mixture for establishing a switching signal;

electronic means connected to said first transducer means and responsive to said switching signal for sequentially developing a first electrical signal and a second electrical signal, said electronic means permitting said first and second electrical signals to overlap for a predetermined time period;

first valve means connected to said supply conduit and responsive to said first electrical signal for preventing communication of the fluid mixture to the first chamber and allowing communication of the fluid mixture to the second chamber during a first mode in a cycle of operation; and

second valve means connected to said supply conduit and responsive to said second electrical signal for preventing communication of the fluid mixture to the second chamber and allowing communication of fluid to the first chamber during a second mode in a cycle of operation, said overlap of the communication of the first and second electrical signals allowing the fluid pressure of the fluid mixture in the first and second chambers to equalize before proceeding to the first and second modes in a cycle of operation.

4,322,229
UNITARY MATRIX, VALVE AND FAN HOUSING FOR ENERGY RECOVERY

Arthur C. W. Johnson, Troy, Mich., assignor to Combustion Research Corporation, Pontiac, Mich.

Filed May 6, 1977, Ser. No. 794,383
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—179 **3 Claims**

1. An energy recovery ventilation system for an enclosure, said system including:

supply and exhaust ducting extending within said enclosure;

a matrix box consisting of an outer open ended housing

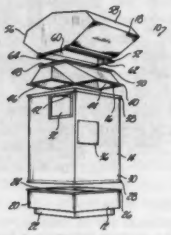
partitioned into four quadrants, each defining an elongated channel within said outer housing;

air supply fan means mounted in a first of said channels producing air flow therethrough;

exhaust fan means mounted in a second of said channels producing air flow therethrough;

a heat storing matrix located in each of a third and fourth of said channels;

valving means alternately positionable to establish an air flow path through each of said first and second channels and opposite ones of said third or fourth channels, including a valve housing mounted to one end of said matrix box outer housing and further including a moveable vane mounted therein positioned to move into alignment with



said partitioning to establish said air flow paths through said first, second, third and fourth channels;

means for cyclically moving said valve means between said alternate positions;

means connecting each of said third and fourth channels to a separate outlet from said enclosure;

means connecting said first channel to said supply ducting; and

means connecting said second channel to said exhaust ducting,

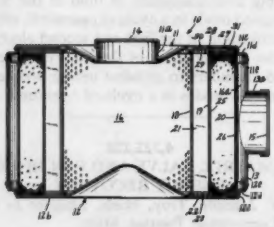
whereby said cyclical operation of said valve means causes alternate exhaust and supply air flow through each of said third and fourth channels and over each of said heat storing matrixes and whereby heat may be exchanged between said exhaust air flow and said supply air flow.

4,322,230

UNITIZED GAS-PARTICULATE FILTER AND HOUSING

Donald W. Schoen, St. Paul, and Jerry J. Klug, Rosemount, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Sep. 8, 1980, Ser. No. 185,344
Int. Cl.[3] B01D *50/00*
U.S. Cl. 55—316 **7 Claims**



4. A filter assembly comprising, in combination:

(a) a unitized housing, comprising a pair of oppositely disposed end covers and an intermediate wall portion peripherally surrounding and continuously interconnecting said end covers, to define an internal cavity;

(b) inlet and outlet ports formed through said housing and opening into said internal cavity thereof;

(c) a composite filter member within said housing cavity, between said inlet and outlet ports, having opposite end portions; said filter member comprising at least two different types of filter media, separated by and sharing a common wall;

(d) sealing means between said opposite end portions of said filter element and said end covers; and

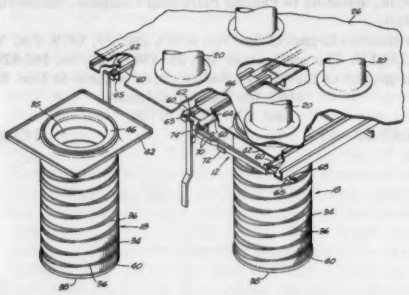
(e) means including a filter media retaining wall compressibly holding said filter member and sealing means between said end covers.

4,322,231

FILTER ELEMENT LOCKING MECHANISM

Joseph J. Hilzendeger, Carson, and Kunio Masuda, Pomona, both of Calif., assignors to Farr Company, El Segundo, Calif.

Filed Jun. 16, 1980, Ser. No. 159,784
Int. Cl.[3] B01D *46/00*
U.S. Cl. 55—357 **3 Claims**

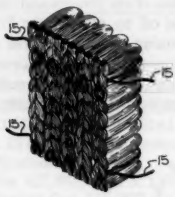


2. A locking mechanism for releasably mounting a plurality of rows of separate depending filter elements in sealing engagement with a partition in a filter housing about a corresponding plurality of rows of flow through apertures in the partition, said locking mechanism comprising: a plurality of pairs of elongaed locking bars, each of said bars being substantially semi-circular in cross-section and defining an elongated substantially flat supporting surface and an elongated curvilinear camming surface; a plurality of depending locking bar supporting brackets rigidly mounted within said filter housing for rotatably (one) each of said locking bars about the central longitudinal axes thereof along each side of each of said rows of filter elements and under portions thereof such that each of said (rows of) filter elements in each of said rows thereof are independently dependent from and slidably moveable along the support surfaces defined by a pair of said locking bars, each of said backets receiving a transverse portion of at least one of said locking bars and a pair of said brackets being disposed adjacent and between each of said filter elements; a handle secured to the extended end of each of said locking bars and extending therefrom substantially perpendicular with respect to the plane of said elongated supporting surfaces such that upon bringing the handles secured to the pairs of locking bars into overlapping and parallel relationships, said curvilinear camming surfaces bear against said portions of said filter elements urging each of said filter elements into sealing engagement with said partition about said apertures; and means for locking said handles in said parallel and overlapping relationships.

4,322,232
FILTER BAG AND METHOD FOR SUPPRESSING ELECTROSTATIC CHARGES

Thomas F. Beane, Concord, N.C., assignor to Beane Filter Media, Inc., Concord, N.C.

Continuation-in-part of Ser. No. 37,286, May 9, 1979, Pat. No. 4,284,507, which is a continuation-in-part of Ser. No. 904,485, May 10, 1978. This application Oct. 30, 1980, Ser. No. 202,133
The portion of the term of this patent subsequent to Aug. 18, 1998, has been disclaimed.
Int. Cl.³ B01D *39/08, 46/50*
U.S. Cl. 55—360 **12 Claims**

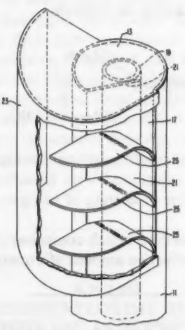


5. In a fabric filter bag comprising a tube of circularly knitted, crimped, synthetic yarn having a denier in the range of from about 70 to about 300 and knit into stitches defining a ground and stitches defining terry loop pile extending from the ground to a predetermined height, the stitches defining open areas in the range of from about 1 micron to about 100 microns, the tube being closed at one end, an improvement which facilitates safely discharging electrostatic charges otherwise accumulating on the fabric filter bag during filtration use, the improvement comprising an electrically conductive strand knitted with the yarn for conducting electrostatic charges from the fabric filter bag.

4,322,233
APPARATUS FOR SEPARATING ENTRAINED LIQUID FROM A LIQUID GAS MIXTURE

Francis J. Sisk, Washington Township, Armstrong County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 2, 1979, Ser. No. 35,168
Int. Cl.³ B01D *46/12*
U.S. Cl. 55—426 **14 Claims**



1. A separator for separating entrained liquid from a gas-liquid mixture, said separator comprising a generally vertically oriented riser tube having a cap on the upper end and an inlet for said mixture on the lower end;

said riser tube having an opening adjacent said cap and a generally vertically oriented planar baffle disposed within said riser tube;

said planar baffle extending from one edge of said opening toward said central portion of said riser tube; and

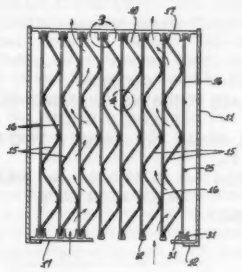
a vertically oriented generally curved wall disposed on the outer side of said riser tube, contiguous with said riser tube adjacent said opening, and spaced farther from said riser tube as said curved wall passes said opening and extends therebeyond;

the contour extent and disposition of said curved wall being such that said mixture is compressed against said curved wall and remains contiguous therewith for a sufficient period to effectively separate and to prevent reentrainment of said liquid and said gas.

4,322,234
MIST ELIMINATOR AND WET DECK PACK

Donald E. Mock, Azusa, Calif., assignor to Cetec Corporation, El Monte, Calif.

Filed Mar. 9, 1981, Ser. No. 242,035
Int. Cl.³ B01D *45/16*
U.S. Cl. 55—440 **6 Claims**



1. In a mist eliminator pack, the combination of:

a plurality of nonplanar condenser sheets, each of said sheets having rows of spaced openings;

a plurality of elongate retainer bars with each bar being disposed adjacent a respective row of said openings, each of said bars having a groove at each end for receiving the edge of a condenser sheet and having spaced projections on each side which are aligned with said openings; and

a plurality of elongate spacer strips, each of said strips having spaced grooves for receiving said ends of said retainer bars;

with said sheets and bars assembled in sandwich relation with opposite edges of each sheet being disposed in said grooves of corresponding bars and with projections of said bars inserted in corresponding openings of said sheets providing flow paths between sheets, and with said bars joined at their ends to said strips by insertion in corresponding grooves of said strips providing the mist eliminator pack.

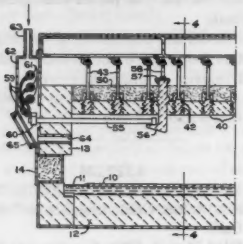
4,322,235
FLOAT GLASS FORMING CHAMBER WITH HORIZONTAL HEATING ELEMENTS

Ronald L. Schwenninger, Ridgeley, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 8, 1980, Ser. No. 195,283
Int. Cl.³ C03B *18/10*
U.S. Cl. 65—182.3 **17 Claims**

1. Apparatus for producing flat glass by the float process comprising an elongated enclosure adapted to hold a pool of molten metal, means for delivering a stream of molten glass into the enclosure onto the molten metal, means for drawing the glass along the length of the enclosure and for withdrawing the glass from the enclosure as a formed ribbon, and heating means within the enclosure for controlling the temperature of the glass comprising horizontally elongated elements extend-

ing into the enclosure through sidewalls of the enclosure and supported above the molten metal at their ends within the



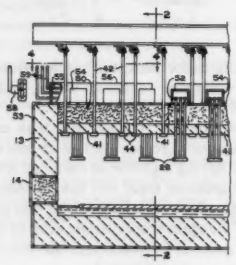
enclosure by a refractory hanger member suspended within the enclosure.

4,322,236

FLOAT GLASS FORMING CHAMBER HAVING LOW PROFILE ROOF

John E. Sensi, Arnold, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 24, 1980, Ser. No. 209,636
Int. Cl.³ C03B *18/16*
U.S. Cl. 65—182.5 **12 Claims**



1. An apparatus for producing flat glass by the float process comprising an elongated enclosure adapted to hold a pool of molten metal, means for delivering a stream of molten glass into the enclosure onto the molten metal, means for drawing the glass along the length of the enclosure and for withdrawing the glass from the enclosure as a formed ribbon, a plurality of electrical heating elements in the enclosure having legs extending to the exterior of the enclosure, electrical connection means connecting the exterior portion of the heating element legs to a source of electrical power, a substantially gas-tight casing extending over the exterior of the enclosure, the casing having openings through which the heating element legs pass, and a plurality of spaced-apart housings on the exterior of the casing, each housing enclosing the exterior leg portion of a minor number of the heating elements and the openings in the casing.

11. An apparatus for producing flat glass by the float process comprising an elongated enclosure adapted to hold a pool of molten metal, means for delivering a stream of molten glass into the enclosure onto the molten metal, means for drawing the glass along the length of the enclosure and for withdrawing the glass from the enclosure as a formed ribbon, and a glaze coating applied to the exterior suface of the top of the enclosure rendering the top substantially gas-tight.

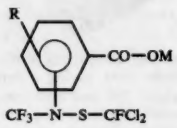
4,322,237

PRESERVING CUT FLOWERS WITH N-(TRIFLUOROMETHYL)-N-(DICHLOROFLUOROMETHYLSULPHENYL)-AMINOBENZOIC ACIDS

Johannes Niggemann, Leverkusen; Engelbert Kühle, Bergisch-Gladbach, and Erich Klauke, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 10, 1980, Ser. No. 185,829
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1979, 2938414
Int. Cl.³ A01N *3/02*
U.S. Cl. 71—68 **9 Claims**

1. In the preservation of cut flowers and other parts of plants which have been cut off by placing the flowers or parts of plants in water containing an aminobenzoic acid derivative as a preservative, the improvement which comprises employing as said preservative an N-(trifluoromethyl)-N-(dichloro-fluoromethyl-sulphenyl)-aminobenzoic acid, or salt thereof, of the formula



in which

M is hydrogen or 1 equivalent of an alkali metal atom or of an alkaline earth metal atom, and

R is hydrogen, methyl, methoxy, trifluoro-methyl, chlorine or nitro.

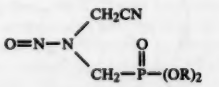
4,322,238

N-NITROSO-N-PHOSPHONOMETHYLGLYCINONITRILE ESTERS AND THE HERBICIDAL USE THEREOF

Gerard A. Dutra, Ladue, Mo., and James A. Sikorski, West Lafayette, Ind., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 13, 1980, Ser. No. 177,653
Int. Cl.³ A01N *57/18*; C07F *9/40*
U.S. Cl. 71—86 **18 Claims**

1. A compound having the formula



wherein R is a member of the group consisting of hydrogen, phenyl and phenyl substituted with from 1 to 2 substituents selected from the class consisting of halogen, lower alkyl and lower alkoxy.

13. A herbicidal method which comprises contacting a plant with a herbicidally effective amount of a compound of claim **1**.

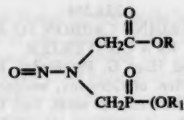
4,322,239

N-NITROSO-N-PHOSPHONOMETHYLGLYCINE ESTERS AND THE HERBICIDAL USE THEREOF

Gerard A. Dutra, Ladue, Mo., and James A. Sikorski, West Lafayette, Ind., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 13, 1980, Ser. No. 177,677
Int. Cl.³ A01N *57/18*; C07F *9/40*
U.S. Cl. 71—86 **24 Claims**

1. A compound having the formula



wherein R is a member of the class consisting of benzyl and lower alkyl and R_1 is a member of the group consisting of phenyl and lower alkoxy substituted phenyl.

17. A herbicidal method which comprises applying to plants a herbicidally effective amount of a compound of claim 1.

4,322,240

HALOACYL AND THIOHALOACYL ARYL-SUBSTITUTED OXAZOLIDINES AND THIAZOLIDINES-HERBICIDAL ANTIDOTES

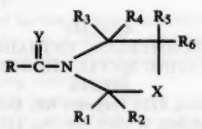
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 627,986, Nov. 3, 1975, Pat. No. 4,072,688. This application Oct. 11, 1977, Ser. No. 840,873

Int. Cl.³ A01N *43/00, 37/00*

U.S. Cl. 71—88 **96 Claims**

1. An herbicidal composition comprising an active thiolcarbamate herbicidal compound and a non-phytotoxic antidotally effective amount of an antidote therefor corresponding to the formula



wherein X is oxygen; R is haloalkyl having 1 to 6 carbon atoms, inclusive, halo is chloro and bromo; R_1 is hydrogen, lower alkyl having 1 to 4 carbon atoms, inclusive, phenyl, naphthyl, substituted phenyl wherein said substituents are mono or di-chloro, nitro, methyl, methoxy, or hydroxyl; R_2 is hydrogen or lower alkyl having 1 to 4 carbon atoms, inclusive; R_3 is hydrogen or lower alkyl having 1 to 4 carbon atoms, inclusive; R_4 is hydrogen, lower alkyl having 1 to 4 carbon atoms, inclusive; R_5 is hydrogen, lower alkyl having 1 to 4 carbon atoms, inclusive, or phenyl; and R_6 is hydrogen; provided that at least one of R_1 or R_5 is phenyl, substituted phenyl or naphthyl; said compound being antidotally active with said thiolcarbamate herbicide compound and wherein said compound is present in an amount between about 0.0001 to about 30 parts by weight of antidote compound per each part by weight of herbicide.

4,322,241

PYRIDYL-2-OXYPHENYLOXIME DERIVATIVES, AND THEIR USE AS HERBICIDES

Georg Pissiotas, Lörrach, Fed. Rep. of Germany, and Hermann Rempfler, Ettingen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

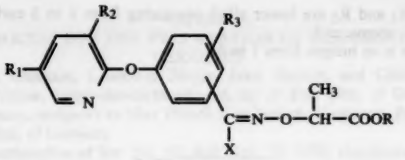
Filed Jul. 28, 1980, Ser. No. 172,575

Claims priority, application Switzerland, Aug. 7, 1979, 7230/79

Int. Cl.³ C07D *213/64*; A01N *43/40*

U.S. Cl. 71—94 **7 Claims**

1. A compound of the formula



wherein

R_1 is chlorine, trifluoromethyl or chlorodifluoromethyl,

each of R_2 and R_3 is hydrogen or chlorine, X is methyl or cyano, and

R is C_1–C_4 alkyl.

6. A method of selectively controlling weeds in crops of cultivated plants, which comprises applying to said crops a herbicidally effective amount of a compound of claims 2 or 3.

4,322,242

METHOD OF INCREASING THE YIELD OF HYDROCARBONS FROM PLANTS

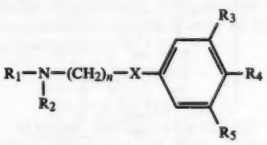
Henry Yokoyama; Ernest P. Hayman; Wan-Jean Hsu, and Stephen M. Poling, all of Pasadena, Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 891,955, Mar. 31, 1978, Pat. No. 4,204,859. This application Sep. 25, 1979, Ser. No. 78,745

Int. Cl.³ A01N *33/04*

U.S. Cl. 71—121 **1 Claim**

1. The process for increasing the accumulation of rubber hydrocarbons in a plant that produces the same, which comprises applying to the plant an effective amount of a mixture, said mixture comprising a compound of the structure



wherein:

X is either oxygen or sulfur,

R_1 and R_2 are lower alkyl containing from 1 to 3 carbon atoms,

R_3, R_4 and R_5 are independently hydrogen, chlorine, bromine, iodine, lower alkyl containing from 1 to 5 carbon atoms, lower alkoxy containing from 1 to 5 carbon atoms, or condensed mono- and polycyclic aromatic ring systems, and

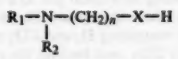
n is an integer from 1 to 3; and wherein:

if R_5 is hydrogen, R_3 and R_4 must be other than hydrogen; and wherein:

if R_3 and R_5 are hydrogen, R_4 must be a branched-chain alkyl group containing from 3 to 5 carbon atoms or an alkoxy group containing a branched-chain alkyl group of 3 to 5 carbon atoms; and wherein:

if R_4 is hydrogen, R_3 and R_5 must be branched-chain alkyl groups containing from 3 to 5 carbon atoms or alkoxy groups containing branched-chain alkyl groups of 3 to 5 carbon atoms or chlorine, bromine, or iodine;

mixed together with a compound of the structure



wherein:

X is either oxygen or sulfur,

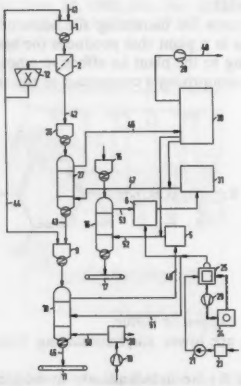
R_1 and R_2 are lower alkyl containing from 1 to 3 carbon atoms, and
n is an integer from 1 to 3.

4,322,243

COMBINATION METHOD AND DEVICE FOR GASIFYING COAL AND FOR REDUCING METAL ORES

Hans Frewer, Marloffstein; Rainer Müller, and Ulrich Schiffers, both of Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim, Fed. Rep. of Germany

Filed Feb. 28, 1980, Ser. No. 125,525
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1979, 2908771
Int. Cl.³ C07C *1/02;* C21B *5/00*
U.S. Cl. 75—34 3 Claims



1. Combination method for the gasification of coal and the reduction of metal ores which comprises subjecting comminuted coal to hydrogenation in a hydrogenation zone in the presence of added hydrogen to produce gaseous constituents containing hydrocarbons and unreacted hydrogen gas and a non-vaporous residual coke component, releasing the gaseous constituents from the hydrogenation zone, discharging the coke component from the hydrogenation zone, subjecting said coke component to steam gasification in a steam gasification zone in the presence of added steam to produce a steam gasification gas containing H_2, CO and CO_2 and an ash residue, passing said steam gasification gas in contact with a metal ore in a reduction zone to effect reduction of the ore, releasing spent gas containing CO after contact with said ore from the reduction zone, passing said spent gas to a conversion zone to react said CO with steam to produce H_2 and CO_2, passing the thus converted gas containing H_2 and CO_2 to a scrubbing zone to effect removal of CO_2, and feeding the converted gas containing H_2 after removal of CO_2 as well as a hydrogen containing gas separated from said released gaseous constituents, to the hydrogenation zone.

4,322,244

PROCESS FOR FEEDING CARBON TO AN IRON MELT IN A CONVERTER

Karl Brotzmann, and Hans G. Fassbinder, both of Sulzbach-Rosenberg, Fed. Rep. of Germany, assignors to Eisenwerk-Gesellschaft Maximilianshutte mbH, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,484
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949794
Int. Cl.³ C21L *5/32, 5/34*
U.S. Cl. 75—51 4 Claims

1. In a process for steelmaking, wherein energy is supplied in the form of ground carbon-containing materials to a molten iron bath in the convertor during refining, and wherein the refining oxygen is blown through the molten iron bath and as a free jet onto the bath surface,

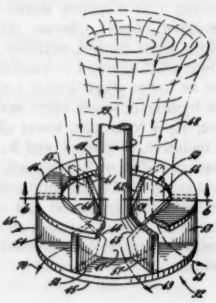
the improvements for the purpose of achieving low nitrogen contents in the steel produced by refining the molten iron bath which comprise: introducing the said carbon-containing materials in suspension with a carrier gas and simultaneously introducing oxygen below the bath surface through tuyeres into the molten iron bath, and terminating the supply of the carbon-containing materials at a carbon content in the molten iron bath of at least about 2%, and thereafter refining the iron melt by oxygen for at least about 5 minutes.

4,322,245

METHOD FOR SUBMERGING ENTRAINING, MELTING AND CIRCULATING METAL CHARGE IN MOLTEN MEDIA

Raymond J. Claxton, 8123 Ferguson Rd., Dallas, Tex. 75228

Filed Jan. 9, 1980, Ser. No. 110,657
Int. Cl.³ C22B *21/00*
U.S. Cl. 75—68 R 19 Claims



1. A method of submerging and entraining a charge in molten melting media wherein said charge comprises pieces not capable of self-submergence, said method comprising:

(a) introducing a supply of said charge into an open bay that has vertically disposed walls and heated molten (metal) media drawn from an entry point below the surface of said molten media by a molten media circulator spaced away from said vertical walls and submerged beneath the surface of said molten media at a point beneath said entry point of heated molten media, said molten media circulator cooperating with said molten media and said vertically disposed walls to thereby establish a molten media circulation path,

(b) drawing said heated molten media including said charge into the top of said molten media circulator (wherein) whereupon said molten media and said charge is turned from a vertically downward direction to a horizontally outward direction to thereby cause said charge (is) to be completely entrained in said molten media and delivered into said (a) molten media circulation path that delivers said charge entrained in said molten media for subsequent heating, further melting and recirculation.

4,322,246
Patent Not Issued For This Number

4,322,247
ALLOY STEEL FOR SEVERE COLD FORMING

Gary S. Henning, Bloomingdale, Ill., assignor to Snap-on Tools Corporation, Kenosha, Wis.

Continuation of Ser. No. 7,971, Jan. 31, 1979. This application Jun. 18, 1980, Ser. No. 160,448
Int. Cl.³ C22C *38/22, 38/32*
U.S. Cl. 75—128 F **5 Claims**

1. An alloy steel having superior ductility and a low rate of work hardening for use in severe cold forming processes to provide products with high static and dynamic strength, said alloy steel consisting essentially of

from about 0.28% to about 0.33% by weight carbon,
from about 0.4% to about 0.7% by weight nickel,
from about 0.4% to about 0.6% by weight chromium,
from about 0.15% to about 0.25% by weight molybdenum,
from about 0.25% to about 0.65% by weight manganese,
up to about 0.15% by weight silicon,
from about 0.0005% to about 0.0035% by weight boron,
and the remainder being iron with minor amounts of impurities,

the annealed yield strength of said alloy steel being about 41,290 PSI and the reduction of area of said alloy steel being about 72% the annealed yield strength being in the range from about 39,290 PSI to about 43,290 PSI and the reduction of area being in the range from about 70% to about 74%.

4,322,248
DOPED MOLYBDENUM-TANTALUM WIRE AND METHOD FOR MAKING

Thomas J. Patrician, Monroeton; James A. Mullendore, Towanda; Theodore L. Weaver, Troy, and Clayton D. Charlesworth, Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

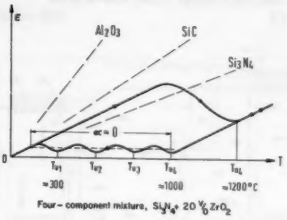
Filed Nov. 15, 1979, Ser. No. 94,403
Int. Cl.³ B22F *3/00*
U.S. Cl. 75—245 **6 Claims**

1. An alloy wire consisting essentially of a homogeneous composition of molybdenum, from about 2 to about 6 percent by weight tantalum, and a sufficient amount of minor ingredients for maintaining favorable tensile strength and ductility after recrystallization, said minor ingredients consisting of from about 50 to about 1000 parts per million by weight silicon and from about 50 to about 1000 parts per million by weight potassium, said minor ingredients and impurities being less than about five parts per thousand by weight, said wire being less than about 2 millimeters diameter.

4,322,249
PROCESS FOR THE PREPARATION OF DISPERSION CERAMICS

Nils Claussen, Leonberg; Jürgen Jahn, Stetten, and Günter Petzow, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Max Planck Gesellschaft, Gottingen, Fed. Rep. of Germany

Continuation of Ser. No. 961,442, Nov. 16, 1980, abandoned. This application Jul. 14, 1980, Ser. No. 167,899
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1977, 2751938
Int. Cl.³ C04B *35/00, 35/10, 35/48, 35/52*
U.S. Cl. 501—88 **9 Claims**



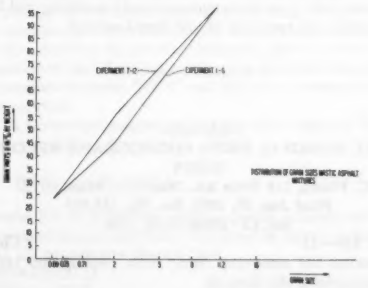
Four-component mixture, Si_3N_4 + 20 % ZrO_2

1. In a process for the production of dispersion ceramics by sintering or hot-pressing a mixture of a matrix-forming ceramic material, the improvement comprising the steps of dispersing throughout said matrix forming material at least one ceramic embedment material, the particles of which range in size from 0.1 to 5μ, which is present in different enantiotropic solid modifications of different densities at different predetermined temperatures and in the form of particles having a predetermined distribution of differently sized particles whereby the particles have a predetermined distribution of different lower phase-transition temperature T_u.

4,322,250
MASTIC ASPHALT MIXTURE

Karl-Hans Müller, Bruchköbel, and Walter Barthel, Langenselbold, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Sep. 12, 1979, Ser. No. 75,061
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 2848583
Int. Cl.³ C08L *95/00*
U.S. Cl. 106—281 R **3 Claims**



1. A composition consisting essentially of mastic asphalt, a finely divided mineral filler, and a sufficient amount of a synthetic silica to produce an increased hardness in said composi-

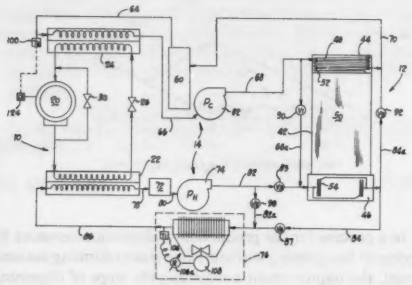
tion as compared to an asphalt not containing said silica, said silica has a BET surface area of 150 to 250 m^2/g.

4,322,251

METHOD AND APPARATUS FOR VAPOR TREATMENT OF METALS

Douglas R. Elliott, East Cleveland, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed May 14, 1980, Ser. No. 149,743
Int. Cl.³ B08B 5/00; C23G 5/02
U.S. Cl. 134—11 **7 Claims**



1. A method for providing heating and cooling for an apparatus for cleaning or phosphatizing metals said apparatus containing a stabilizing liquid solvent having a low-boiling point, such as methylene chloride or the like, comprising the steps of:

(a) providing a reservoir of liquid solvent and a zone of solvent vapor above said liquid solvent;

(b) providing a heat pump system having a heat-emitting section and a heat-absorbing section both disposed outside of said liquid reservoir;

(c) transferring heat from said heat-emitting section of said heat pump system to said liquid reservoir by circulating a heat transfer medium between said section and said reservoir;

(d) providing a vapor condenser a predetermined distance above said liquid reservoir to condense vaporized solvent and establish a saturated solvent vapor zone; and,

(e) cooling said vapor condenser with a heat-conveying fluid circulatory system communicating between said condenser and said heat-absorbing section of said heat pump system, further characterized in that said liquid reservoir is cooled during periods of non-use by diverting heat-conveying fluid from said condenser and circulating said fluid through said reservoir of said liquid solvent.

4,322,252

LABEL REMOVAL FROM PHONOGRAPH RECORD DISKS

Robert C. Plumb, 218 Farm Rd., Marlboro, Mass. 01752

Filed Jun. 19, 1980, Ser. No. 161,025
Int. Cl.³ B08B 3/08, 7/04
U.S. Cl. 134—12 **9 Claims**

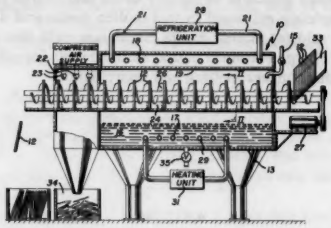
7. Process for removing labels from phonograph record disks, comprising the steps of:

(a) passing the disks through an enclosed space,

(b) heating a pool of adhesive solvent in the space to cause vapor to pass over the disks,

(c) condensing the vapor at the upper part of the space so that the condensate falls downwardly around the disks into the pool,

(d) passing the disks through a drying space, and



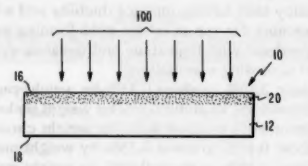
(e) subjecting the disks to a blast of compressed air to blow off the labels.

4,322,253

METHOD OF MAKING SELECTIVE CRYSTALLINE SILICON REGIONS CONTAINING ENTRAPPED HYDROGEN BY LASER TREATMENT

Jacques I. Pankove, Princeton, and Chung P. Wu, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1980, Ser. No. 145,239
Int. Cl.³ H01L 21/26, 21/265, 45/00
U.S. Cl. 148—1.5 **5 Claims**



1. A method of fabricating a single crystalline silicon material having a band gap energy greater than 1.1 eV by the incorporation of atomic hydrogen therein, comprising:

converting a part of a body of single crystalline silicon adjacent a surface into an amorphous region of graded crystallinity;

exposing said amorphous region to atomic hydrogen whereby an integral region of hydrogenated amorphous silicon of graded crystallinity is formed adjacent said crystalline body; and

annealing said hydrogenated amorphous silicon region with a laser for a sufficient time and at a sufficient power density to convert said region into single crystalline silicon without substantial out-gasing of the hydrogen.

4,322,254

REGENERATION OF ELECTRICAL CONDUCTIVITY OF METALLIC SURFACES

Alan E. Van Til, Itasca, and James P. Shoffner, Elk Grove Village, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Sep. 22, 1980, Ser. No. 189,448
Int. Cl.³ C23F 7/00, 7/04
U.S. Cl. 148—6.14 R **8 Claims**

1. A method for the regeneration of electrical conductivity of a metallic iron surface having a coating of ferrous oxide, which comprises simultaneously contacting the ferrous oxide-coated iron surface with a hydrogen halide and an ammonium halide at conditions to form a mixture of ferric oxide and ferric chloride having an electrical conductivity greater than that of ferrous oxide.

4,322,255

HEAT TREATMENT OF STEEL AND METHOD FOR MONITORING THE TREATMENT

Michel Kostelitz, Versailles, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Dec. 28, 1979, Ser. No. 107,785
Claims priority, application France, Jan. 15, 1979, 79 00872
Int. Cl.[3] C21D *1/48*
U.S. Cl. 148—16.5 8 Claims

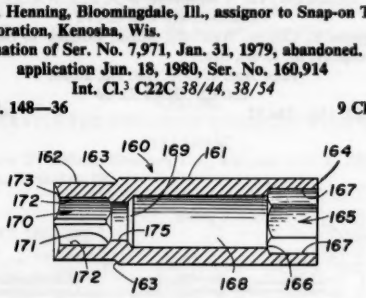
1. A process for the heat treatment of steel within a furnace, comprising the steps of forming a mixture of a carrier gas, an active gas and carbon monoxide, said carrier gas including nitrogen and having a proportion of O_2 less than 10 ppm, a proportion of H_2O less than 10 ppm and a proportion of CO_2 less than 10 ppm, said active gas containing a hydrocarbon in a volumetric proportion between 0.2 and 30 percent of the mixture, selected from the group of compounds consisting of CH_4, C_4H_{10}, C_3H_8, C_2H_4, C_2H_2 and C_2H_6, said carbon monoxide being present in the mixture in a volumetric proportion between 0.1 and 30 percent; continuously directing a constant flow of said mixture into said furnace; maintaining the temperature of the steel in said furnace between 750° and 1150° C.; measuring the residual contents of hydrocarbon, of steam and of carbon dioxide gas in the atmosphere issuing from the furnace; predetermining the proportion of hydrocarbon in the atmosphere penetrating into the furnace in accordance with the relationship between the residual contents of hydrocarbon, steam and carbon dioxide gas, and the proportions of carbon introduced in the steel; and controlling the delivery of hydrocarbon penetrating into the furnace in accordance with the predetermined proportion.

4,322,256

TOOL MADE FROM ALLOY STEEL FOR SEVERE COLD FORMING

Gary S. Henning, Bloomingdale, Ill., assignor to Snap-on Tools Corporation, Kenosha, Wis.

Continuation of Ser. No. 7,971, Jan. 31, 1979, abandoned. This application Jun. 18, 1980, Ser. No. 160,914
Int. Cl.[3] C22C *38/44, 38/54*
U.S. Cl. 148—36 9 Claims



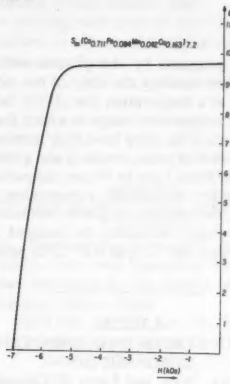
1. A high strength forged tool manufactured by severe cold forming of an alloy steel having superior ductility and a low rate of work hardening to provide a tool with high static and dynamic strength, said alloy steel consisting essentially of
from about 0.28% to about 0.33% by weight carbon,
from about 0.4% to about 0.7% by weight nickel,
from about 0.4% to about 0.6% by weight chromium,
from about 0.15% to about 0.25% by weight molybdenum,
from about 0.25% to about 0.65% by weight manganese,
up to about 0.15% by weight silicon,
from about 0.0005% to about 0.0035% by weight boron,
and the remainder being iron with minor amounts of impurities,
the annealed yield strength of said alloy steel being about 41,290 PSI and the reduction of area of said alloy steel being about 72%.

4,322,257

PERMANENT-MAGNET ALLOY

Anton Menth, Nussbaumen; Hartmut Nagel, Wettingen, and Ulrich Spinner, Aeugst, all of Switzerland, assignors to BBC, Brown, Boveri & Company, Limited, Baden, Switzerland

Division of Ser. No. 906,421, May 16, 1978, Pat. No. 4,192,696, which is a continuation-in-part of Ser. No. 746,226, Nov. 3, 1976, Pat. No. 4,131,495. This application May 21, 1979, Ser. No. 41,194
Claims priority, application Switzerland, Dec. 2, 1975, 15631/75
The portion of the term of this patent subsequent to Dec. 26, 1995, has been disclaimed.
Int. Cl.[3] H01F *1/04, 1/08*
U.S. Cl. 148—101 6 Claims



1. A permanent magnet monophase alloy selected from the group consisting of

$$RE(Co_{1-u-v-y}Fe_uMn_vX_y)_z$$

wherein RE is samarium, cerium, cerium mischmetal (MM), praseodymium, neodymium, lanthanum or mixtures thereof, X is Cu, Al or mixtures thereof, and
$0.084 \leqq u < 0.15$
$0.02 < v < 0.15$
$0.05 < y < 0.20$
$7.2 < z \leqq 8.5$
which has been prepared by the process which comprises homogenization heat-treating the alloy of the molten and cast starting materials at a temperature just above the solidus temperature or in the temperature range in which the non-RE and non-Co components of the alloy have their maximum solubility in the RE_2Co_{17} mixed crystals; crushing and grinding the alloy to a particle size of from 2 μm to 10 μm; magnetically aligning the resultant powder; isostatically compressing the resultant powder; sintering the resultant briquette just below the solidus temperature; and finally annealing the sintered briquette at a temperature between 700° C. and 900° C. to produce a monophase crystal.

2. A permanent magnet monophase alloy selected from the group consisting of

$$RE(Co_{1-u-v-y}Fe_uMn_vX_y)_z$$

wherein RE is samarium, cerium, cerium mischmetal (MM), praseodymium, neodymium, lanthanum or mixtures thereof, X is Al, Cu or mixtures thereof, and
$0.084 \leqq u < 0.15$
$0.02 < v < 0.15$
$0.05 < y < 0.20$
$7.2 < z \leqq 8.5$
which has been prepared by the process which comprises

casting the alloy of the molten starting materials in a physical shape as similar as possible to that desired for the end product; solidifying the cast alloy by directed crystallization; homogenizing it at a temperature just below the solidus temperature; and finally annealing the cast alloy at a temperature between 700° C. and 900° C. to produce a monophase crystal.

3. A permanent magnet monophase alloy selected from the group consisting of

$$RE(Co_{1-u-x-y}Fe_uV_xX_y)_z$$

wherein RE is samarium, cerium, cerium mischmetal (MM), praseodymium, neodymium, lanthanum or mixtures thereof, X is Al, Cu or mixtures thereof and

$0.084 \leqq u < 0.15$
$0.02 < x < 0.10$
$0.05 < y < 0.20$
$7.2 < z \leqq 8.5$

which has been prepared by the process which comprises homogenization heat-treating the alloy of the molten and cast starting materials at a temperature just above the solidus temperature or in the temperature range in which the non-RE and non-Co components of the alloy have their maximum solubility in the RE_2Co_{17} mixed crystals; crushing and grinding the alloy to a particle size of from 2 μm to 10 μm; magnetically aligning the resultant powder; isostatically compressing the resultant powder; sintering the resulting briquette just below the solidus temperature; and finally annealing the sintered briquette at a temperature between 700° C. and 900° C. to produce a monophase crystal.

4,322,258

THERMALLY STABLE EMULSION EXPLOSIVE COMPOSITION

Walter B. Sudweeks, Orem, and Larry D. Lawrence, Salt Lake City, both of Utah, assignors to IRECO Chemicals, Salt Lake City, Utah

Filed Nov. 9, 1979, Ser. No. 92,897
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—2 **9 Claims**

1. A cap-sensitive water-in-oil emulsion explosive composition consisting essentially of a water-immiscible liquid fuel as a continuous phase; an emulsified aqueous inorganic oxidizer salt solution as a discontinuous phase; an emulsifier selected from the group consisting of sorbitan fatty acid esters, glycol esters, unsaturated substituted oxazolines, and derivatives thereof; a density reducing agent; and as a part of the salt solution, calcium nitrate in an amount of from about 20% to less than 50% by weight based on the total composition to maintain cap-sensitivity of the composition under storage temperatures as high as 50° C.

4,322,259

METHOD OF MAKING A REINFORCED VACUUM CLEANER FILTER BAG

John E. Fesco, South Hempstead, N.Y., assignor to Studley Paper Company, Inc., Inwood, N.Y.

Division of Ser. No. 50,418, Jun. 20, 1979, Pat. No. 4,240,813. This application Aug. 7, 1980, Ser. No. 176,252
Int. Cl.³ B01D *46/02*; B29D *23/10*
U.S. Cl. 156—203 **6 Claims**

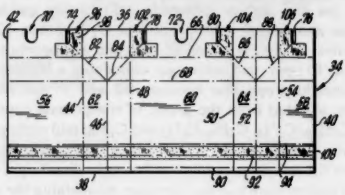
1. A method of manufacturing a vacuum cleaner filter bag comprising the steps of:

forming a blank from air permeable filter material having fold lines and cut-outs to form a desired filter bag configuration, said blank having one side which forms an inside surface of the filter bag and an opposite side which forms an outside surface of the filter bag, each of said blank sides having opposing first and second marginal edge portions and opposing third and fourth longitudinal marginal edge portions;

pre-applying at least one of a heat, a self-stick and a pressure sensitive adhesive material onto said one side of the blank, prior to formation of the filter bag, in specified areas which are susceptible to tears, said sensitive adhesive material being pre-applied as a dry adhesive onto the first and second marginal edge portions of said one side of the blank;

applying a self sealing wet adhesive along one of the longitudinal marginal edge portions of the blank;

folding the blank into a tubular configuration with the wet adhesive disposed between associated overlapping third and fourth longitudinal marginal edge portions of the blank to provide a seam, and with the dry sensitive adhesive material on associated marginal edge portions abutting each other;



folding closed and gluing opposite ends of the tubular configuration by applying additional self sealing wet adhesive onto the first and second marginal edge portions of said opposite side of the blank to form the filter bag; and

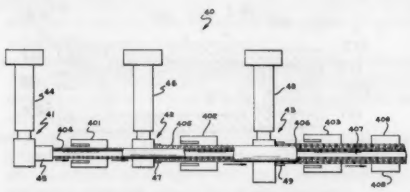
finally applying at least one of heat and pressure to the folded closed filter bag to activate the abutting dry sensitive adhesive material to secure the associated marginal edge portions on the inside surface of the filter bag together in order to provide reinforcement to the filter bag.

4,322,260

PROCESS FOR THE CONTINUOUS EXTRUSION FORMING OF A PLASTIC DOUBLE-WALLED FOAM-CORE CONDUIT

Lawrence E. Conlon, Westfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 4, 1979, Ser. No. 26,841
Int. Cl.³ B29D *23/04*
U.S. Cl. 156—244.12 **24 Claims**



1. A process for the extrusion forming of a double-walled, foam-core conduit having generally concentric inner and outer plastic tube walls generally evenly spaced apart and bonded by a foam-core layer, said conduit including said tube walls and said foam core layer being formed from a plastic that is a thermoplastic, said process comprising the continuous and sequential steps of:

A. extrusion forming said inner tube wall in a first extrusion means,

B. conveying said inner tube through a second extrusion means and extrusion coating an outer surface of said inner tube with an even coating of said foam-core layer having a density of about 0.015 to 0.4 g./c.c.,

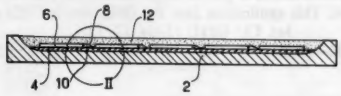
C. conveying said inner tube, coated with said foam-core layer, through a third extrusion means and extrusion form-

ing said outer tube wall in contact with and bonded to said foam-core layer providing a plastic double-walled, foam-core conduit.

4,322,261
METHOD OF MANUFACTURING A SOLAR CELL PANEL

Pierre Dubois, Paris, France, assignor to Societe Anonyme dite: Compagnie Generale d'Electricite, Paris, France

PCT No. PCT/FR79/00044, § 371 Date Jan. 21, 1980, § 102(e) Date Jan. 21, 1980
PCT Filed May 21, 1979, Ser. No. 196,794
Claims priority, application France, May 19, 1978, 78 14917
Int. Cl.³ H01L *31/18*
U.S. Cl. 156—280 **4 Claims**



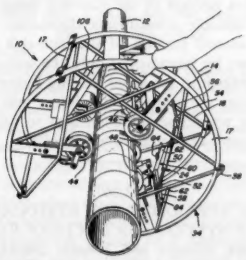
1. A method of manufacturing a panel of photovoltaic solar cells, said method comprising the following steps:
disposing photovoltaic cells on a lower support plate and establishing electrical connections for these cells;
disposing on the cells an upper transparent encapsulation layer to retain and protect these cells;
the improvement comprising:
disposing the encapsulation layer in the form of a soft layer of un-vulcanized elastomer;
lightly applying on said un-vulcanized elastomer layer, a local progressive pressure to press it against the cells and the support plate to cause it to flow into the spaces between the cells; and
vulcanizing this layer.

2. The method as claimed in claim 1, wherein said layer of elastomer is pressed against the cells with the aid of a pressure roller.

4,322,262
APPARATUS FOR WRAPPING CONDUITS WITH SHEET MATERIAL

Spencer D. Cottam, Houston, Tex., assignor to T. C. Mfg. Co., Inc., Evanston, Ill.

Filed Mar. 3, 1980, Ser. No. 126,367
Int. Cl.³ B65H *81/00*
U.S. Cl. 156—392 **36 Claims**

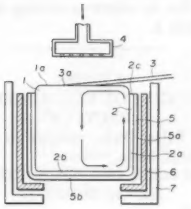


1. Apparatus for wrapping an elongated conduit helically with sheet material comprising:
a frame assembly adapted to circumscribe a portion of a conduit including a plurality of sheet material contacting support members extending inwardly therefrom in a rotatable but non-resilient manner and including a fixed frame portion and a rotatable frame portion;
means for retaining said conduit within said frame assembly while said frame assembly is rotated around said conduit during wrapping of said sheet material on said conduit;
an adjustable frame member disposed in chordal relation to said frame assembly to connect said fixed frame portion to said rotatable frame portion, said adjustable frame member including means to adjust a length of said adjustable frame member to secure said rotatable frame portion to said fixed frame portion without completely circumscribing said conduit;
means for feeding a strip of said sheet material against an outer surface of said conduit; and
means for pressing said strip of sheet material against said outer surface to adhere said strip of sheet material to said outer conduit surface.

4,322,263
METHOD FOR HORIZONTAL RIBBON CRYSTAL GROWTH

Bosshi Kudo, Nagareyama; Kazuyoshi Matsuo, Murayama; Takeshi Maki, Noda, and Masamichi Yoshioka, Yoshikawa, all of Japan, assignors to The Agency of Industrial Science and Technology, Tokyo, Japan

Filed Dec. 5, 1979, Ser. No. 100,480
Claims priority, application Japan, Dec. 9, 1978, 53-153004
Int. Cl.³ C30B *15/06, 15/14*
U.S. Cl. 156—617 H **3 Claims**

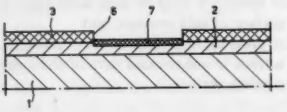


1. In a method for growing ribbon-like crystal from a melt of crystalline material, which comprises;
providing a crucible having an open top end defined by a peripheral edge, a closed bottom end and a peripheral wall joining the top end and the bottom end, said crucible being adapted to maintain a crystalline material charge in a melt form;
charging the crucible with a melt of the crystalline material, to a level above the peripheral edge;
contacting the upper surface of the melt with a seed crystal, whereby there is formed a solid-liquid interface between the melt and the seed crystal;
cooling the solid-liquid interface beneath the melting point of the crystalline material, whereby crystal grows at the interface;
drawing the growing crystal from the interface continuously, in a substantially horizontal direction;
the improvement which comprises;
circulating the melt in the crucible by convection so that the melt ascends along the peripheral wall, flows toward the center of the crucible at the top of the melt, descends to the bottom of the crucible beneath the solid-liquid interface and flows toward the peripheral wall along the bottom of the crucible.

4,322,264
METHOD FOR SELECTIVE ETCHING OF TITANIUMDIOXIDE RELATIVE TO ALUMINUM

Jean-Pierre Rioult, Epron, and Raymond Fabien, Douvres la Delivrande, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 152,972, May 23, 1980, abandoned, which is a continuation of Ser. No. 746,877, Dec. 2, 1976, abandoned. This application Mar. 6, 1981, Ser. No. 241,178
Claims priority, application France, Dec. 9, 1975, 75 37638
Int. Cl.³ H01L *21/283, 21/308*
U.S. Cl. 156—655 2 Claims



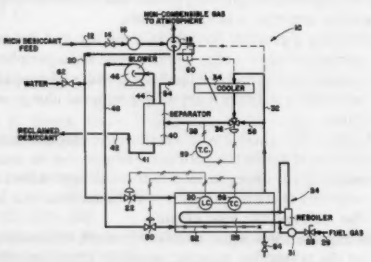
1. A method of selectively etching a titanium oxide film covering an aluminum or an aluminum alloy substrate, relative to said substrate, comprising applying to selected portions of the exposed surface of said titanium oxide film an aqueous solution consisting essentially of an aqueous mixture of a 30% aqueous solution by weight of hydrogen peroxide and from 10 to 50% by volume of a unit of volume of said hydrogen peroxide solution of an aqueous solution of ammonia of a specific weight of 0.90 for a time sufficient for said solution to dissolve said selected portions of said titanium dioxide film while having a substantial little effect on said substrate.

2. In the method of formation of aluminum contacts in a semiconductive device wherein an aluminum film protected by titanium dioxide mask is selectively anodized, the improvement wherein the titanium dioxide mask is formed from a titanium dioxide film by selective etching in accordance with the method of claim 1.

4,322,265
ATMOSPHERIC GLYCOL RECLAIMER WITH VAPOR RECYCLE

Harold S. Wood, Tulsa, Okla., assignor to Maloney-Crawford Corporation, Tulsa, Okla.

Filed Jun. 3, 1980, Ser. No. 156,164
Int. Cl.³ B01D *1/14*
U.S. Cl. 159—47 R 21 Claims

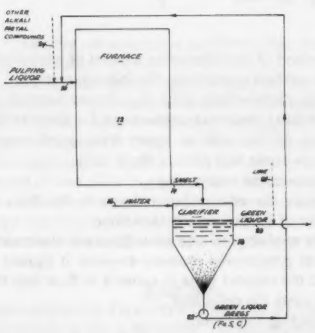


1. In a method of reclaiming a liquid desiccant comprising: heating a water rich desiccant within a reboiler to its atmospheric boiling temperature, which is a temperature above the boiling point of water and below the temperature of degradation of said desiccant, to produce vapor essentially of desiccant and water, the improvement being:
(a) partially condensing said vapor within a condenser;
(b) recovering condensed desiccant from uncondensed vapor within a separator;
(c) dividing uncondensed vapor from said separator into first and second streams;
(d) recycling said first stream of vapor into intimate contact with said desiccant within said reboiler;
(e) cooling said second stream of vapor and refluxing condensed desiccant to said separator while venting non-condensible gases; and
(f) recovering all condensed desiccant from said separator without returning to reboiler for use elsewhere.

4,322,266
PROCESS FOR CATALYZING REDUCTION IN A KRAFT RECOVERY BOILER

Hugh W. Nelson, West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Continuation of Ser. No. 86,231, Oct. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 956,558, Nov. 1, 1978, abandoned. This application Jan. 26, 1981, Ser. No. 228,450
Int. Cl.³ D21C *11/04, 11/12*
U.S. Cl. 162—30 K 5 Claims



1. A Kraft pulping process in which spent pulping liquor bearing inactive alkali sulfates and carbon is subjected to combustion in a recovery furnace to produce inorganic ash and to reduce the alkali sulfates to alkali sulfides, said process comprising the steps of introducing spent pulping liquor to the furnace, burning the spent pulping liquor in the furnace to form a molten smelt, removing the smelt from the furnace and adding said smelt to a quantity of water to produce green liquor containing iron-rich dregs, removing essentially all said dregs from the green liquor to provide a quantity of iron-rich dregs and a quantity of essentially iron-free green liquor, recirculating the essentially iron-free green liquor to a causticizer, dividing the iron-rich dregs into first and second portions, discarding only the first portion of the iron-rich dregs after having removed the valuable constituents therefrom, and directly recycling the second portion of the iron-rich dregs to the recovery furnace by introducing only the second portion of the iron-rich dregs into the spent pulping liquor immediately before introducing the spent pulping liquor into the recovery furnace thereby providing sufficient iron to catalytically reduce the alkali surface therein to alkali sulfide.

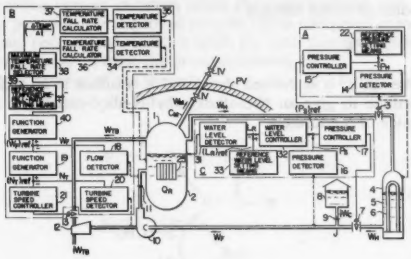
4,322,267
CONTROL APPARATUS FOR RESIDUAL HEAT REMOVAL SYSTEM FOR NUCLEAR REACTOR

Mitsuo Kinoshita, Hitachi, and Takashi Omori, Kitaibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1979, Ser. No. 77,835
Claims priority, application Japan, Sep. 22, 1978, 53/117144
Int. Cl.³ G21C *7/00*
U.S. Cl. 376—216 7 Claims

1. An apparatus for controlling a residual heat removal

system for a nuclear reactor, comprising a reactor housed in a containment vessel; a main steam conduit for leading reactor steam to a turbine for generating electric power, said main steam conduit having isolation valves near said containment vessel; and a residual heat removal system to be started upon closure of said isolation valves to remove residual heat out of said reactor, said residual heat removal system including a closed loop having a heat exchanger for condensing steam generated in said reactor into water and a pump for pressurizing the condensed water sent thereto through a first control valve and for supplying said pressurized water into said reactor, and an auxiliary turbine actuated by reactor steam sent thereto through a second control valve so as to drive said pump, wherein a tank for containing make-up water therein, a check valve inserted in a make-up water pipe for supplying said make-up water to the outlet of said first control valve, a



make-up water control apparatus for controlling said first control valve according to the lowering of the level of the reactor water after the closure of said isolation valves so as to lower the pressure at the outlet of said first control valve, and a feedwater flow control apparatus for determining the aperture of said second control valve in accordance with the deviation signal representing the difference between the temperature fall rate in said reactor and a desired value for said rate are further provided and wherein said make-up water control apparatus supplies make-up water into said reactor to compensate the lowered level of the reactor water when the pressure at the outlet of said control valve falls below the pressure to open said check valve while the feedwater flow is controlled by said feedwater flow control apparatus in accordance with said desired value for said rate so as to control the water level to the initial level.

4,322,268

COOLING SYSTEM FOR A NUCLEAR REACTOR

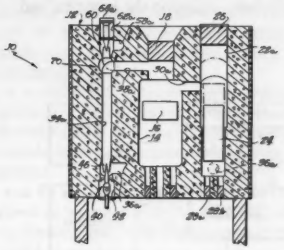
Hans H. Amtmann, Rancho Santa Fe, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 3, 1978, Ser. No. 892,821

Int. Cl.³ G21C *19/28*

U.S. Cl. 376—298 **7 Claims**

1. In a gas-cooled nuclear reactor having a reactor vessel defining a reactor core, at least one primary cooling loop including a primary flow conduit communicating with said core and having primary circulator means adapted to effect flow of coolant through said core, and at least one auxiliary cooling loop including an auxiliary flow conduit communicating with said core and having auxiliary circulator means selectively operable to effect flow of coolant through said core, the improvement wherein said primary and auxiliary flow conduits are axially aligned and defined by a common penetration in said reactor vessel, and including a common flow return duct communicating with said core and intersecting said common penetration to form a common junction with said primary and auxiliary flow conduits so that coolant flow through either of said primary and auxiliary flow conduits is returned to said core through said common flow return duct, said primary and auxiliary circulator means being mounted within said common penetration so as to facilitate selective circulation of flow through said primary and auxiliary cooling loops, and flow diverter means located within said common junction and



adapted for selective operation between a first mode operative to effect coolant circulation through only said primary cooling loop and a second mode operative to effect coolant circulation through only said auxiliary cooling loop.

4,322,269

METHOD FOR THE WET QUENCHING OF COKE

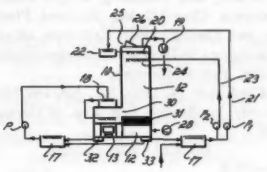
Dietrich Wagener; Claus Flockenhaus, and Manfred Blase, all of Essen, Fed. Rep. of Germany, assignors to Didier Engineering GmbH., Fed. Rep. of Germany

Division of Ser. No. 112,439, Jan. 16, 1980, Pat. No. 4,289,585. This application May 14, 1981, Ser. No. 263,354

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915330

Int. Cl.³ C10B *39/08*

U.S. Cl. 201—39 **4 Claims**



1. In a process for the wet quenching of coke including the steps of introducing hot coke into a quenching tower, spraying the hot coke with water to quench the coke, and condensing the steam produced by spraying the hot coke with water with a water spray to form a condensate, the improvement comprising the steps of collecting the condensate, introducing at least a portion of the collected condensate into the quenching tower as a spray, and introducing an upwardly flowing stream of air into the quenching tower to cool the condensate sprayed in the quenching tower.

4,322,270

PROCESS FOR DEPLETING AN IMPURITY BY ELECTROLYSIS AND RECOVERING ELECTRICAL ENERGY FROM ITS DECOMPOSITION PRODUCTS

Stephen F. Skala, 3839 S. Wenonah Ave., Berwyn, Ill. 60402

Continuation-in-part of Ser. No. 117,240, Jan. 31, 1980, Pat. No. 4,276,145. This application Jan. 12, 1981, Ser. No. 224,655

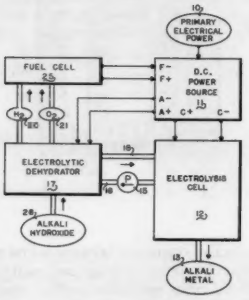
Int. Cl.³ C25C *3/02*

U.S. Cl. 204—68 **12 Claims**

7. A process for depleting an electrolyzable impurity from an electrolyte, said electrolyte having a higher decomposition voltage than the impurity and forming the impurity as a decomposition product, comprising the steps of:

forming the impurity in the electrolyte by operating an electrolysis cell to decompose the electrolyte,

operating an impurity electrolysis cell which contains the electrolyte with impurity therein at a lower voltage which decomposes the impurity but does not decompose the electrolyte thereby depleting the impurity, and



transporting at least one of the decomposition products formed by operating the impurity electrolysis cell to a fuel cell for generation of electrical energy.

12. The process of claims 7, 8, 9, 10, or 11 wherein the electrolyte is a molten alkali hydroxide and the decomposition product from the impurity electrolysis cell which is transported to the fuel cell is hydrogen.

4,322,271

PROCESS FOR THE PREPARATION OF N-VINYL-N-ALKYL-CARBOXYLIC ACID AMIDES

Harald Jensen, Frankfurt am Main; Erwin Schmidt, Kelkheim; Michael Mitzlaff, Bad Homburg; Jürgen Cramer, Eppstein; Rudolf Pistorius, Ober-Mörlen; Hartmut Pietsch, Hofheim am Taunus, and Klaus Dehmer, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

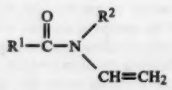
Filed May 14, 1980, Ser. No. 149,742

Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919755

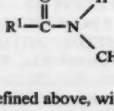
Int. Cl.³ C07C *102/00*

U.S. Cl. 204—73 R **15 Claims**

1. A process for the preparation of an N-vinyl-N-alkyl carboxylic amide of the formula



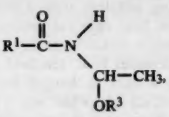
wherein R^1 is hydrogen, methyl or ethyl, and R^2 is methyl or ethyl, which comprises the steps of (a) anodically alkoxylating an N-ethyl-carboxylic acid amide of the formula



wherein R^1 is as defined above, with an alcohol of the formula

R^3OH

in which R^3 is alkyl of from 1 to 4 carbon atoms, in an electrolysis cell with anode material of vitreous carbon, and with at least one alkali metal alkosulfate, tetraalkylammonium alkosulfate, or mixture thereof, to produce an N-α-alkoxyethylcarboxylic acid amide of the formula



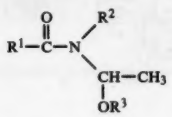
wherein R^1 and R^3 are as defined above; (b) alkylating said N-α-alkoxyethyl-carboxylic acid amide by reacting it with an alkylating agent of the formula

R^2X,

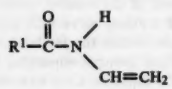
wherein R^2 is as defined above and X is chlorine, bromine or iodine or of the formula

$R_2{}^2X$

wherein R^2 is as defined above and X is sulfate in an alkaline medium to give an N-α-alkoxyethyl-N-alkyl-carboxylic acid amide of the formula



wherein R^1, R^2 and R^3 are as defined above, and (c) splitting off of an alcohol of the formula R^3OH, R^3 being as defined above, from said N-α-alkoxyethyl-N-alkyl-carboxylic acid amide by heating it to a temperature of from about 60° to about 350° C.; or, instead, after step (a)(b_1) splitting off an alcohol of the formula R^3OH, R^3 being as defined above, from said N-α-alkoxyethyl-carboxylic acid amide by heating to a temperature of from about 60° to about 600° C., to produce an N-vinyl carboxylic acid amide of the formula



wherein R^1 is as defined above; and (c_1) alkylating said N-vinyl-carboxylic acid amide by reacting it in an alkaline medium with an alkylating agent of the formula R^2X, R^2 being as defined above and X being chlorine, bromine or iodine, or of the formula $R_2{}^2X$, R^2 being as defined above and X being sulfate.

4,322,272

CURABLE COMPOSITION

Tetsuo Mita; Nobutaka Tani; Hirokazu Nakanishi; Junji Takase, and Katsuhiko Isayama, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 6, 1980, Ser. No. 127,750

Int. Cl.³ C08F *2/48*; C08G *77/00*; C08L *83/00*

U.S. Cl. 204—159.13 **9 Claims**

1. A liquid composition capable of being cured to a tack-free, weather-resistant adhesive upon exposure to atmospheric moisture and light, consisting essentially of:

(a) about 100 parts by weight of an organic polymer having a polyether main chain with at least one terminal hydrolyzable silicon-containing group and a molecular weight from about 500 to 15,000, and

(b) about 0.01 to 30 parts by weight of a photocurable substance selected from the group consisting of photocurable acrylic or methacrylic monomers and oligomers, polyvi-

nyl cinnamate, and organic azide group-containing materials.

4,322,273

PROCESS FOR CROSS-LINKING SHAPED NON-POLAR SYNTHETIC RESINS AND ELECTRICAL INSULATION CONTAINING SUCH RESINS

Jan D. van Drumpt, Deventer, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Aug. 27, 1979, Ser. No. 70,124

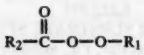
Claims priority, application Netherlands, Aug. 31, 1978, 7808931

Int. Cl.³ C08F 2/52

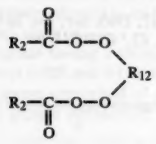
U.S. Cl. 204—165 **13 Claims**

1. In the cross-linking of a non-polar synthetic resin by a process which comprises exposing the resin to high frequency alternating current radiation while the resin is mixed with a polar peroxide, the improved process which comprises exposing said resin to said radiation while the resin contains a polar peroxide selected from the group consisting of

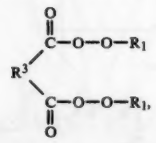
(A) a perester of the formula



(1)

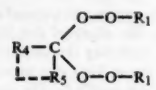


(1a)

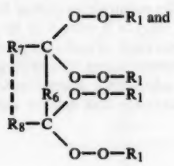


(2)

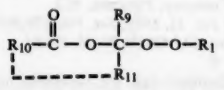
(B) a perketal of the formula;



(3)



(C) a peroxide of the formula



(5)

R_1 is a tertiary alkyl group having 4–12 carbon atoms; and in the case of peroxides of the formula 5, a tertiary alkyl group having 4–12 carbon atoms or a tertiary aralkyl group having 7–12 carbon atoms;

R_2 is a primary alkyl group having 1–12 carbon atoms or, an aryl group having 7–12 carbon atoms and substituted with one or more methyl groups; and where the peroxide has the formula 1*a*, R_2 is a phenyl group;

R_3 is a primary alkylene group having 1–12 carbon atoms, a vinylidene group or a phenylene group;

R_4 and R_5 are primary alkyl groups having 1–12 carbon atoms or together with the adjacent carbon atom form part of a cyclopentamethylene group or cyclohexamethylene group which may or may not be methyl-substituted;

R_6 is a diprimary alkylene group having 1–12 carbon atoms or together with the adjacent carbon atoms and R_7 and R_8 form part of a cyclopentamethylene group or cyclohexamethylene group which may be methyl-substituted;

R_7 and R_8 are primary alkyl groups having 1–12 carbon atoms or together with the adjacent carbon atoms and R_6 forming part of a cyclopentamethylene group or cyclohexamethylene group which may be methyl-substituted;

R_9 is a methyl or phenyl group;

R_{10} and R_{11} are primary alkyl groups having 1–12 carbon atoms, cyclopentyl groups or cyclohexyl groups, aryl groups or together with the adjacent

group form part of a substituted or unsubstituted ring system having 5 or 6 atoms in the ring; and

R_{12} is ditert. alkylene group having 8–12 carbon atoms, said resin being substantially free from a second polar substance added thereto to promote decomposition of the peroxide into radicals, whereby said resin is cross-linked without significant gas occlusion in the resulting cross-linked resin.

4,322,274

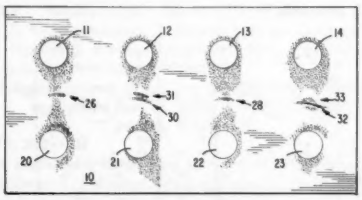
METHOD OF DIAGNOSING CYSTIC FIBROSIS PATIENTS AND ASYMPTOMATIC CARRIER OF THE CYSTIC FIBROSIS GENE

Gregory B. Wilson, 2706 Cameron Blvd., and H. Hugh Fudenberg, 9 Second Ave., both of Isle of Palms, S.C. 29451

Filed Aug. 28, 1980, Ser. No. 182,007

Int. Cl.³ G01N 27/26, 33/16

U.S. Cl. 204—180 G **31 Claims**

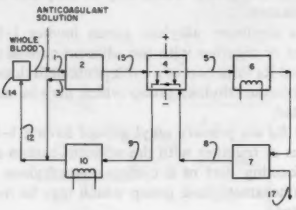


1. The method which comprises producing monospecific anitbody to Cystic Fibrosis Protein; inserting said monospecific antibody to Cystic Fibrosis Protein into a first position on a gel-coated electrophoresis plate; inserting a body fluid for diagnosing into a second position on said plate; imposing an electric potential across said position, with an electrode being adjacent said body fluid and the opposite pole electrode being adjacent the antibody, the presence of Cystic Fibrosis Protein being indicated by at least one precipitation zone, the relative position of said precipitation zone between the first and second positions indicating the concentration of Cystic Fibrosis Protein.

4,322,275
FRACTIONATION OF PROTEIN MIXTURES

Surendar M. Jain, Watertown, Mass., assignor to Ionics Incorporated, Watertown, Mass.

Continuation-in-part of Ser. No. 111,144, Jan. 10, 1980, Pat. No. 4,276,140. This application Oct. 16, 1980, Ser. No. 197,394
Int. Cl.³ B01D *13/02;* A23J *1/06;* A61K *37/04*
U.S. Cl. 204—180 P 37 Claims

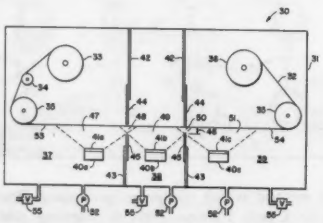


1. A process for separating an aqueous protein mixture into fractions having intrinsically distinguishable compositions comprising removing substantially all the turbidity therefrom, subsequently, adding a salting-out agent thereto by passing said mixture at a velocity of between 3–40 cm/sec. into and out of an electrodialysis apparatus containing at least one pair of contiguous membranes defining a liquid flow chamber therebetween, impressing an electric current across said apparatus at about a CD/K=0.1 to 10 (where CD is current denisty in m-amps/cm^2 and K is the conductivity of the aqueous mixture in milli Siemens/cm) thereby altering the ionic environment of said mixture by increasing its ionic concentration sufficiently to at least partially destabilize one or more proteins in said mixture, allowing said destabilized protein to form turbidity, subsequently removing substantially all of said turbidity and maintaining the temperature of said mixture during the said separation in the range of between about 0°–40° C.

4,322,276
METHOD FOR PRODUCING AN INHOMOGENEOUS FILM FOR SELECTIVE REFLECTION/TRANSMISSION OF SOLAR RADIATION

Nathan K. Meckel, La Mesa, and Benjamin B. Meckel, Del Mar, both of Calif., assignors to Deposition Technology, Inc., San Diego, Calif.

Filed Jun. 20, 1979, Ser. No. 50,484
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 P 5 Claims

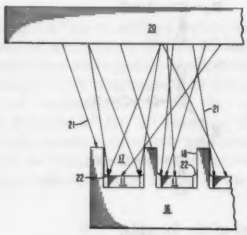


1. A method for sputtering an inhomogeneous thin film laminate upon a transparent substrate which comprises the steps of:
(a) positioning a substrate upon a holder within a vacuum chamber, said chamber defined by two or more essentially isolated sub-chambers;
(b) adjusting apertures through which said substrate translates into adjacent sub-chambers whereby to form regions of overlap wherein said substrate simultaneously receives sputter deposition from magnetron cathodes contained within adjacent sub-chambers;
(c) positioning at least one magnetron cathode within each of said sub-chambers, said cathodes comprising material to be sputter deposited;
(d) evacuating said chamber to a predetermined low pressure;
(e) flushing said evacuated chamber with non-reactive gas thereby to reduce wall gas impurities contained therein;
(f) back filling each of said sub-chambers to predetermined pressures with non-reactive gas;
(g) further introducing reactive gas into one or more of said sub-chambers whereby predetermined atmospheres are produced within each of said sub-chambers;
(h) differentially pumping said gases through said sub-chambers whereby the predetermined atmospheres within each of said sub-chambers are maintained; and
(i) sequentially translating said substrate at a constant rate of speed through each of said sub-chambers whereby an inhomogeneous coating of cathode material is deposited thereon.

4,322,277
STEP MASK FOR SUBSTRATE SPUTTERING

Stephen T. Opresko, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,713
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 R 6 Claims



5. A method of sputter coating the sides of a substrate while simultaneously shielding the edges of the substrate from the sputter coating material including the steps of:
providing a mask having at least one groove with a width exceeding the substrate width by the dimension S and a height exceeding the substrate thickness by the dimension h, and having the ratio of h over S to be at least five;
placing a substrate into each of said at least one groove with one side of the substrate facing the opening of said groove;
sputter coating said side with a desired material; and
turning over said substrate and sputter coating the other side.

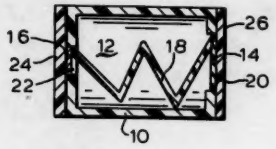
4,322,278
GAS DETECTION UNIT

Raymond B. Cromer, New York, N.Y., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Jul. 21, 1980, Ser. No. 170,367
Int. Cl.³ G01N *27/28, 27/54*
U.S. Cl. 204—195 R 4 Claims

1. An electrochemical cell for detecting and measuring hydrazine in a gaseous medium containing hydrazine in as little as parts per billion; comprising
(a) an electrolyte chamber containing an aqueous potassium hydroxide electrolyte;
(b) an anode with one side facing said chamber;
(c) a cathode with one side facing said chamber;
(d) a reference electrode with one side facing said chamber;

(e) means interconnecting said anode and said reference electrode for maintaining a preselected fixed reference potential on said anode;
(f) intake means for exposing said anode to said gaseous medium for detecting hydrazine contained therein;
the improvement characterized by
(g) wick means contained entirely within said chamber and interconnecting said anode, said cathode and said reference electrode;
(h) said wick means being substantially rigid and flat for



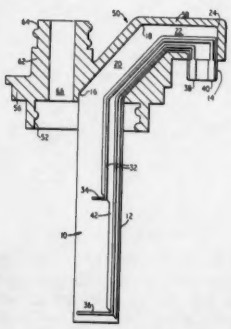
continuously maintaining in non-sagging relationship firm engagement with the said surfaces of said anode, said cathode and said reference electrode facing said chamber;
(i) said wick means extending along the entire length of said chamber for continuously carrying said electrolyte and the vapor pressure thereof to said anode, said cathode and said reference electrode;
(j) said wick means having a thickness within the range of between about 0.005 and 0.150 inches; and
(k) said wick means comprised of porous sintered polypropylene with grafted methacrylic acid groups thereon.

4,322,279

ELECTRODE ARRANGEMENTS

Phillip G. Piper, Millhaugh-by-Methven, and John P. Rutzen, Perthshire, both of Scotland, assignors to G. R. International Electronics Limited, Great Britain

Filed Oct. 10, 1980, Ser. No. 195,914
Int. Cl.³ C12M *1/34;* C12Q *1/70;* G01N *27/30*
U.S. Cl. 204—195 B **10 Claims**



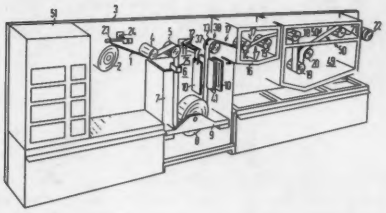
1. Bacterial activity sensing electrode assembly for a bacterial testing container, comprising electrically conductive material laid down by thick film techniques in a predetermined pattern on a non-metallic surface using a mask, and having no metal-to-metal interfaces, such surface being on a probe carrying a cap or stopper between its bacterial sensing surface and electrode connection means.

4,322,280

ELECTROLYSIS DEVICE FOR THE GALVANIC REINFORCEMENT OF TAPE-SHAPED PLASTIC FOILS WHICH ARE PRECOATED TO BE CONDUCTIVE

Karl H. Houska, Munich; Lothar Floegel, Neuried; Joachim Hauck, Taufkirchen, all of Fed. Rep. of Germany; Daniel Hosten, Handzame, Belgium; Wilfried Denys, Oostkamp, Belgium; Luc Boone, Oostkamp, Belgium, and Marc De Vogelaere, Zedelgem, Belgium, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 198,181
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949741
Int. Cl.³ C25D *7/06*
U.S. Cl. 204—207 **14 Claims**



1. An electrolysis device for electrolytic deposition of a metal on at least one surface of a tape which has been precoated with a metal on that surface, comprising:
an electrolytic metal deposition bath;
first electrode means in said bath for connection to a first pole of a source;
tape drive means for moving the tape through the bath including first guide rollers defining a single tape loop through the bath;
second electrode means in the tape path and mounted immediately above the bath to provide areal wiping contact of the tape over an area of the one metallized surface immediately prior to entrance into said bath and connected to a second pole of the source; and
second guide rollers along the tape path downstream of the bath including a second guide roller contacting the metallized surface and connected to a respective source.

4,322,281

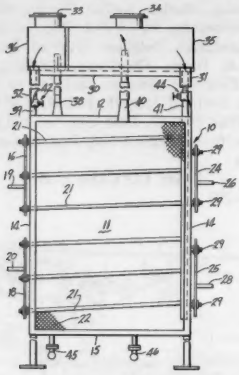
METHOD FOR CONTROLLING FOAMING WITHIN GAS-LIQUID SEPARATION AREA

David B. Wright; Sanders H. Moore, both of Cleveland, Tenn., and Morton S. Kircher, Clearwater, Fla., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 213,800, Dec. 8, 1980. This application Jan. 21, 1981, Ser. No. 226,979
Int. Cl.³ C25B *9/00*
U.S. Cl. 204—237 **12 Claims**

1. A method for controlling the level of foaming in the gas separation area of an electrolytic cell having at least a first flow path and a second flow path between each electrode and the gas separation area thereby establishing each electrode and the gas separation area in fluid flow communication, the gas separation area further having at least one gas flow conduit in communication therewith to transport gaseous electrolytic product to processing apparatus, the method comprising the steps of:
(a) circulating electrolyte fluids along the first flow path from each electrode to the gas separation area;
(b) circulating electrolyte fluids through the gas separation area;
(c) circulating electrolyte fluids along the second flow path from the gas separation area back to each electrode; and
(d) selectively controlling the flow rate of the electrolyte

fluids along the second flow path to thereby control the flow rate of electrolyte fluids through the gas separation area so that the level of foaming within the gas separation



area is controlled at a level that prevents the blow-over of foam into the gas flow conduit and still permits separation of entrained gas from the electrolyte fluids within the gas separation area.

4,322,282

TANK FOR AN ELECTROLYTIC CELL

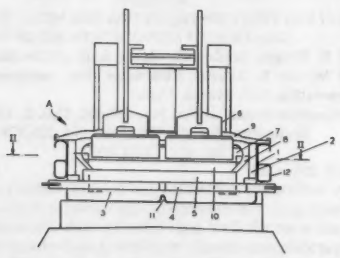
Raoul Jemec, Zollikerberg, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Oct. 8, 1980, Ser. No. 195,250

Claims priority, application Switzerland, Oct. 17, 1979, 9324/79

Int. Cl.³ C25C *3/10*

U.S. Cl. 204—243 R **15 Claims**



1. In an electrolytic cell used in the production of aluminum having a tank having a floor provided with cathode blocks and sidewalls provided with essentially a carbon-like lining the improvement which comprises selectively positioned stiffening elements and securing means for releasably securing said selectively positioned stiffening elements to the sidewalls of the tank for reinforcing said sidewalls so as to counter the pressure exerted on said sidewall due to the dilation of the contents of the cell.

4,322,283

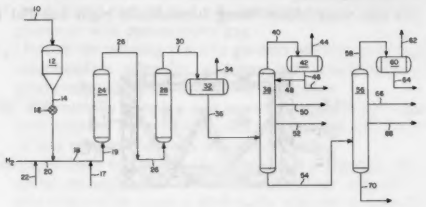
COAL CONVERSION IN THE PRESENCE OF ADDED HYDROGEN SULFIDE

Peter S. Maa, Baytown, and Lavanga R. Veluswamy, Houston, both of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 4, 1980, Ser. No. 183,862

Int. Cl.³ C10G *1/06*

U.S. Cl. 208—8 R **24 Claims**



1. A process for liquefying coal or similar carbonaceous solids by converting said solids into lower molecular weight liquid hydrocarbons which comprises contacting said carbonaceous solids with molecular hydrogen under liquefaction conditions in a liquefaction zone in the absence of externally added hydrocarbon liquids and in the presence of added hydrogen sulfide, wherein the pressure in said liquefaction zone is maintained between about 300 psig and 5000 psig.

4,322,284

SOLVENT REFINING OF COAL USING OCTAHYDROPHENANTHRENE-ENRICHED SOLVENT AND COAL MINERALS RECYCLE

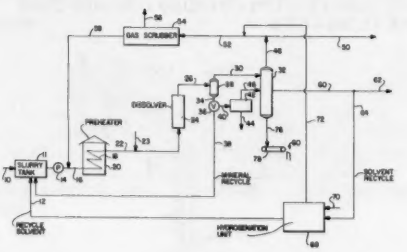
Shirley C. Tsai, and Howard G. McIlvried, III, both of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Feb. 5, 1980, Ser. No. 118,860

The portion of the term of this patent subsequent to Apr. 6, 1999, has been disclaimed.

Int. Cl.³ C10G *1/08, 1/06, 45/50*

U.S. Cl. 208—10 **19 Claims**



1. A process for the conversion of ash-containing feed coal to a liquid fuel product, which comprises contacting said feed coal with hydrogen, recycle slurry and a coal-derived recycle solvent in a coal liquefaction zone, said recycle solvent containing OHP, THP and P, said OHP and THP being present in a ratio of OHP/THP greater then 0.4 and less than 15, said OHP constituting at least 5 weight percent based on the total weight of said recycle solvent, withdrawing reactor effluent comprising liquid from said coal liquefaction zone, normally solid deashed coal, undissolved coal and coal minerals, and recycling a slurry comprising at least a portion of said coal minerals, normally solid deashed coal and undissolved coal for

contact with said feed coal, passing a portion of the liquid produced in said coal liquefaction zone having a boiling range between about 200° and about 500° C. and containing OHP and THP in a ratio of OHP/THP below 0.4, with hydrogen to a hydrogenation zone, and hydrogenating said liquid in the presence of a supported catalyst consisting essentially of Group VIB and Groupd VIII metals under hydrogenation conditions including a temperature between about 260° and about 427° C. to provide an OHP-enriched solvent containing OHP and THP in a ratio of OHP/THP greater than 0.4 and below 15, and at least 1 weight percent THP, and recycling the OHP-enriched solvent for contact with said feed coal, wherein OHP represents octahydrophenanthrene, its alkyl homologues, octahydroanthracene, its alkyl homologues, or mixtures thereof; THP represents tetrahydrophenanthrene, its alkyl homologues, tetrahydroanthracene, its alkyl homologues, or mixtures thereof, and P represents non-hydrogenated phenanthrene, its alkyl homologues, non-hydrogenated anthracene, its alkyl homologues, or mixtures thereof and recovering a portion of the liquid produced in said coal liquefaction zone as liquid fuel product.

2. The process of claim 1, wherein the ratio of OHP/THP of said liquid stream is increased in said hydrogenation zone to a value greater than 1.

3. The process of claim 2, wherein said separated liquid stream boils in the range of between about 280° and about 400° C.

4,322,285

HYDROCARBON DEHYDROCYCLIZATION WITH AN ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 46,885, Jun. 8, 1979, Pat. No. 4,238,366, which is a division of Ser. No. 943,492, Sep. 18, 1978, Pat. No. 4,183,805, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Nov. 24, 1980, Ser. No. 210,098

The portion of the term of this patent subsequent to Jan. 15, 1997, has been disclaimed.

Int. Cl.[3] C10G *35/06;* C07C *2/52*

U.S. Cl. 208—139 25 Claims

1. A method for dehydrocyclizing a dehydrocyclizable hydrocarbon comprising contacting the hydrocarbon at hydrocarbon dehydrocyclization conditions with an acidic catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing catalytically effective amounts of a halogen component, a manganese component and a uniform dispersion of a catalytically effective amount of a platinum group component maintained in the elemental metallic state.

4,322,286

HYDROCARBON DEHYDROCYCLIZATION WITH AN ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 68,278, Aug. 20, 1979, Pat. No. 4,256,566, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Jan. 5, 1981, Ser. No. 222,431

The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.

Int. Cl.[3] C10G *35/06*

U.S. Cl. 208—139 25 Claims

1. A method for dehydrocyclizing a dehydrocyclizable hydrocarbon comprising contacting the hydrocarbon at hydrocarbon dehydrocyclization conditions with an acidic catalyst composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing catalytically effective amounts of a halogen component, a tin component and a uniform dispersion of a catalytically effective amount of a platinum group component maintained in the elemental metallic state.

4,322,287

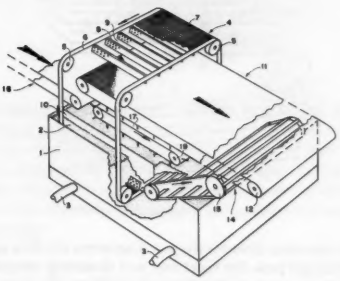
FLUIDIZED BED SEPARATOR

Arthur Zaltzman; Amos Mizrach, and Zeev Schmilovitz, all of Beith Dagan, Israel, assignors to The State of Israel, Ministry of Agriculture, Jerusalem, Israel

Filed May 21, 1981, Ser. No. 265,820

Int. Cl.[3] B03B *5/46*

U.S. Cl. 209—44 8 Claims



1. A sink-float fluidized bed separator comprising:

a container for the fluidized bed;

means for maintaining the bed in a state of fluidization under constant pneumatic pressure;

a conveyor whose inner face is adapted for lifting objects out of the bed (lifting conveyor) designed to travel between a lower portion of the bed and the space above it forming an enclosure of substantially rectangular prismatic shape with horizontal and vertical sides, the fluidized bed portion within said enclosure constituting a separation zone whose bottom is formed by the lower horizontal portion of the lifting conveyor;

a first output conveyor for the removal of the sink fraction travelling through the space above the bed inside said enclosure and adapted to receive objects dumped by the lifting conveyor;

a second output conveyor adapted for the removal of the float fraction;

means for mechanically moving the float fraction in the bed out of the separation zone in a direction substantially normal to the direction of horizontal travel of said lifting conveyor; and

means for feeding into the separation zone a mixture of objects to be separated.

4,322,288

APPARATUS FOR SIZING PARTICULATE MATERIAL

Willibald Schmidt, Eichstätter St. 49, D-8432 Beilngries, Fed. Rep. of Germany

Filed Jan. 30, 1981, Ser. No. 230,007

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1980, 3015665

Int. Cl.[3] B07B *1/04*

U.S. Cl. 209—356 4 Claims

1. An apparatus for sizing particulate material comprising:

a first downwardly inclined sizing screen;

a first collecting conduit for receiving material from the surface of said first sizing screen;

a first discharge pan disposed beneath said first sizing screen to receive, advance and discharge material passing through said first screen;

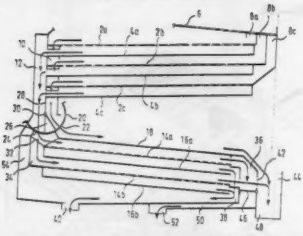
a second collecting conduit for receiving material from the first discharge pan;

a second sizing screen downwardly inclined in an opposite direction from and disposed below said first discharge pan;

a second discharge pan disposed beneath said second sizing screen to receive, advance and discharge material passing through said second screen;

a third discharge pan disposed above said second sizing screen operable to receive, advance and discharge material independently of said second screen;

a discharge opening disposed below said second discharge pan; and



a first movable diverter disposed between the first and third discharge pans for receiving and diverting material from the first and second collecting conduits, the first diverter diverting material from the first collecting conduit to the upper end of the third discharge pan and material from the second collecting conduit to the upper end of the second sizing screen when the diverter is in a first position and diverting material from the first collecting conduit to the upper end of the second sizing screen and material from the second collecting conduit to the discharge opening when the diverter is in a second position.

4,322,289

ROLLER FOR CLEANING MESHES OF ROTARY SCREENS

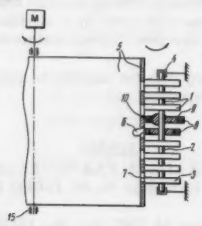
Evgeny S. Goncharov, ulitsa Lomonosova 30/1, kv. 46, Kiev, U.S.S.R.

Filed Sep. 13, 1979, Ser. No. 75,109

Claims priority, application U.S.S.R., Nov. 28, 1978, 2688201[I]

Int. Cl.³ B07B *1/50*

U.S. Cl. 209—384 **5 Claims**



1. An apparatus for cleaning meshes of rotary screens, the rotary screens being mounted for rotation about a first axis, said apparatus comprising:

a shaft;

means for mounting said shaft for rotation about a second axis parallel to and spaced from said first axis;

a plurality of cleaning members mounted on said shaft, each cleaning member comprising a body of revolution having an outer portion and an inner portion arranged concentrically in one another, said inner portion being secured to said shaft and the space between said second axis and said first axis being such that said outer portion engages the surface of said screen, said outer portion having a stiffness several times greater than the stiffness of said inner portion so that during rotation of the screen said outer portion contacts and dislodges particles entrapped in the meshes of the surface of the rotary screen, said inner portion being resiliently deformable to allow movement of said outer portion away from the screen when said outer portion contacts a stiff bump on the surface of the screen.

4,322,290

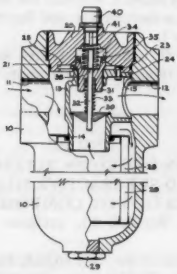
FILTER ASSEMBLY

John R. Carl, Orange, Calif., assignor to Paul-Munroe Hydraulics, Inc., Orange, Calif.

Filed Mar. 10, 1981, Ser. No. 242,363

Int. Cl.³ B01D *27/10, 35/14*

U.S. Cl. 210—133 **7 Claims**



1. In a top loading filter assembly, the combination of:

an outer housing having a space for receiving a filter element, with a drain plug at the bottom of said space, a top opening for insertion of said filter element into said filter element space, and a first inlet passage and a first outlet passage between said top opening and said filter space;

an inner housing having a second inlet passage and a second outlet passage;

a plug for mounting said inner housing within said outer housing above said filter element space and closing said top opening and defining a normal liquid flow path from said first inlet passage through said filter element, second inlet passage and second outlet passage to said first outlet passage;

a first poppet mounted in said inner housing providing a first valve between said second inlet passage and second outlet passage, said first poppet including a first spring opposing flow from said second inlet passage to said second outlet passage; and

a second poppet mounted in said inner housing providing a second valve between said first inlet passage and first outlet passage, said second poppet including a second spring opposing flow from said first outlet passage to said first inlet passage.

4,322,291

WATER-DISPENSERS

Kuo-Sheng Ho, No. 48, Chiu Ting Rd., Kaohsiung, Taiwan

Filed Aug. 19, 1980, Ser. No. 179,470

Int. Cl.³ B01D *35/00*

U.S. Cl. 210—181 **8 Claims**

8. A water dispenser which provides purified water upon demand comprising:

a synchronous valve having a plurality of inlet and outlet

apertures which simultaneously receives unpurified water from a water source and dispenses purified water;

a first conduit for conveying the unpurified water from the water source to said synchronous valve;

a water purification means;

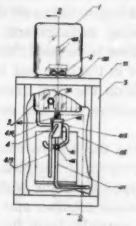
a second conduit for conveying unpurified water from said synchronous valve to said water purification means;

a third conduit for conveying purified water from said water purification means back to said synchronous valve;

a fourth conduit for conveying purified water from said synchronous valve to a water outlet; and

a fifth conduit operatively connected to said synchronous valve to convey purified water from said synchronous valve to a hot water heater which dispenses purified hot water through said outlet, and a flow control means incorporated within said synchronous valve, whereby purified water may be directed to said fifth conduit or said fourth conduit;

wherein said synchronous valve comprises a cylindrical body having an axial cylindrical chamber therein, an axial aperture in the bottom of said cylindrical body communicating with said chamber, said axial aperture being connected to said first conduit means, a first radial aperture located in the lower portion of said cylindrical body communicating with said chamber, said first radial aperture connected to said second conduit means, a set of three coplanar apertures located in the upper portion of said cylindrical body radially extending at angles of 120 degrees with respect to each other and communicating with said chamber, the first of said set of three coplanar apertures connected to said third conduit means, the second of said set of three coplanar apertures connected to said fourth conduit means and the third of said set of coplanar apertures connected to said fifth conduit means; a cylindrical rotating plug positioned within and rotatable within said chamber, said cylindrical rotating plug having a cavity in its bottom portion, a first set of two coplanar radially extending apertures communicating with said cavity and positioned with respect to each other at an angle of 120 degrees, a second set of two coplanar apertures interconnected with one another and at an angle of 120 degrees in the upper portion of said cylindrical rotating plug, and a shaft extending axially from the upper portion of said cylindrical rotating plug, a washer positioned over said cylindrical rotating plug so that the shaft passes through said washer, a cover having a hole at its center to allow the shaft to extend therefrom and means for attaching said cover to said cylindrical body, and a handle mountable on said shaft.



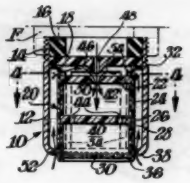
4,322,292

AERATOR

Ronald W. Knox, Hockessin, Del., assignor to RJD, Newark, Del.

Filed Jan. 2, 1981, Ser. No. 222,274
Int. Cl.³ B01D *35/00*; E03C *1/08*
U.S. Cl. 210—198.1 **14 Claims**

1. An aerator for attachment to a water faucet or the like comprising a hollow open-ended body member having an upstream inlet end and a downstream discharge end, securing means at said upstream end of said body member for connection to a faucet in flow communication therewith, a flow control member in said body member at said upstream end having a restricted passageway and orifice for directing a stream of water toward said downstream end, air passage means in said body member for directing atmospheric air at the stream of water as it emerges from said orifice for aerating the water at the upstream end of said body member in a mixing chamber downstream from said flow control member with said flow control member being at the upstream end of said mixing chamber, and said air passage means confining the flow of air from the atmosphere to said orifice at the point of maximum pressure drop whereby said aerator is capable of aerating at a low flow rate.

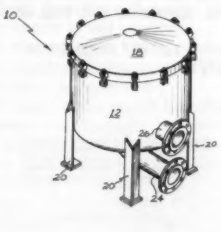


4,322,293

MULTIPLE ELEMENT FILTER

Howard W. Morgan, Jr., P.O. Box 622, Michigan City, Ind. 46360

Filed Feb. 19, 1981, Ser. No. 235,912
Int. Cl.³ B01D *29/30*
U.S. Cl. 210—232 **2 Claims**

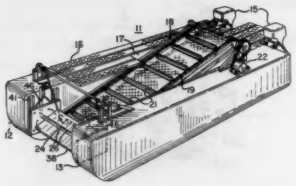


1. In a filter including a housing having side and bottom walls and a top wall, said housing top wall having at least two openings therein, filtering means for straining a liquid removably carried by said top wall within each opening therein, a cover including a lower peripheral edge and a dome-shaped inner face, said cover having a closed position spanning said housing top wall with the inner face thereof spaced from said filtering means, a liquid inlet in communication with said filtering means between said cover inner face and housing top wall whereby liquid can pass from the inlet into said filtering means and thereafter through the filtering means and into the interior of said housing and out an outlet therein, the improvement comprising grid means carried by said cover at its lower peripheral edge and spanning said inner face thereof, said grid means being positioned adjacent said filtering means for retaining the filtering means within said top wall openings when said cover is in its closed position, said grid means having openings therein to accommodate liquid flow from the inlet into the filtering means.

4,322,294
APPARATUS FOR REMOVING OIL AND DEBRIS FROM WATER

Larry D. Price, 2962 Demetropolis Rd., Mobile, Ala. 36609

Continuation-in-part of Ser. No. 62,675, Aug. 1, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,031
Int. Cl.³ E02B 15/04
U.S. Cl. 210—242.3 4 Claims

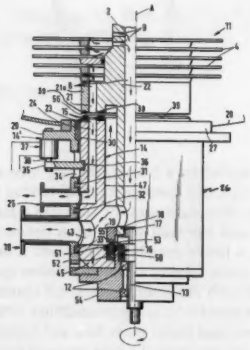


1. An apparatus configured to be positioned substantially on the surface of a body of water for collecting and removing liquid and solid waste matter floating on the surface of said body of water, comprising, in combination, pressure pipe means for selectively providing water under pressure substantially along a horizontal line beneath the surface of the water to move liquid and solid waste matter from areas forward of said pipe means over said pipe means, an elongated member positioned to abut said pipe means along the length of said pipe means and extending downwardly therefrom, and water flow sealing means between said member and said pipe means whereby water flow from areas behind and beneath said pipe means tends to be blocked.

4,322,295
FLUID FILTRATION APPARATUS

Josef Brokhage, Leverkusen, Fed. Rep. of Germany, assignor to Schenk-Filterbau Gesellschaft mit beschränkter Haftung, Waldstetten, Fed. Rep. of Germany

Filed Oct. 12, 1979, Ser. No. 84,419
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1978, 2845108
Int. Cl.³ B01D 33/26
U.S. Cl. 210—331 4 Claims



1. A filtration apparatus for separating solid material from a fluid medium, the apparatus comprising in combination:

a housing for receiving the fluid medium to be filtered;

a bearing means at the top wall of the housing and an opening through the bottom of the housing;

a vertically extending hollow shaft journalled in the bearing means for rotation with respect to the housing and passing through the opening in the bottom wall of the housing, said hollow shaft including a plurality of holes therein communicating with the interior of the housing and a drain positioned outside of the housing;

a filter packet, including a plurality of horizontally extending surfaces extending radially beneath the holes of accumulating solid particles precipitating out of the fluid medium as the fluid medium drains through the holes into the hollow shaft;

a residual filtration section adjacent to the lower end of the hollow shaft, the residual filtration section including an annular member positioned in spaced relation to the exterior surface of the hollow shaft and defining an annular space therebetween through which the filtered medium drains;

a base disposed beneath the housing, said base including: bearing means for supporting the hollow shaft for rotation with respect to the base and housing, a bearing seal for protecting the bearing means and preventing drainage over the bearing means, a first drain in the base communicating with the drain in the hollow shaft, a second drain in the base communicating with the annular space;

static sealing means between the base, hollow shaft and annular member, the sealing means comprising:

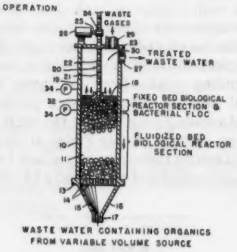
downwardly facing, fixed, static sealing surfaces on the hollow shaft and annular member and upwardly facing, fixed static sealing surfaces on the base; wherein, when the static sealing surfaces are in contact, the second drain in the base is isolated from the housing and the bearing means in the base and bearing seals in the base are isolated from the first drain whereby the bearing means and bearing seal are protected from the fluid medium; and

means for displacing the hollow shaft and annular member vertically with respect to the base to open the seal therebetween whereupon the static seals do not ware when the hollow shaft, annular member and filter packet are rotated to remove solid particles from the horizontally extending surfaces by centrifugal force.

4,322,296
METHOD FOR WASTEWATER TREATMENT IN FLUIDIZED BED BIOLOGICAL REACTORS

Liang-Tseng Fan, Manhattan, Kans., and Chin-Yung Wen, Morgantown, W. Va., assignors to Kansas State Univ. Research Foundation, Manhattan, Kans.

Filed Aug. 12, 1980, Ser. No. 177,455
The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.
Int. Cl.³ C02F 3/06
U.S. Cl. 210—610 10 Claims


OPERATION
WASTE GASES
TREATED WASTE WATER
FIXED BED BIOLOGICAL REACTOR SECTION & BACTERIAL FLOC
FLUIDIZED BED BIOLOGICAL REACTOR SECTION
WASTE WATER CONTAINING ORGANICS FROM VARIABLE VOLUME SOURCE

1. The method of carrying out a fluidized bed biological reaction for advanced treatment of wastewater, in which there is provided within a confined upwardly-extending treatment zone an upflow bed of solid particulate carrier having the biological reaction bacteria cells growing thereon, said wastewater to be treated being passed upwardly through said bed at a velocity at least sufficient to fluidize said bed; wherein the improvement comprises:

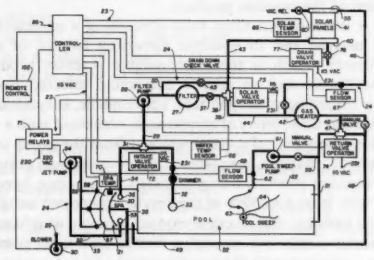
(a) restraining the top of said bed with a perforated plate to maintain a smaller uppermost portion of said bed as a fixed bed with a larger portion of said bed therebeneath being in fluidized condition, the perforations in said plate being of smaller size than said carrier so as to retain said carrier in said treatment zone while permitting the treated water to pass therethrough;
(b) continuing to pass the wastewater to be treated through said bed for initial biological reaction in said fluidized bed portion and final biological reaction in said fixed bed portion until said fixed bed portion has become clogged with cellular material;
(c) discontinuing said treatment and raising said plate to a level at which said bed can be fully fluidized but below a wash water outlet from said confined space; and
(d) passing wash water upwardly through said bed at a velocity sufficient to fully fluidize said bed while removing wash water together with excess cellular material through said plate and into said outlet, the fixed portion of said bed being broken up and fluidized to release cellular material therefrom.

4,322,297

CONTROLLER AND CONTROL METHOD FOR A POOL SYSTEM

Peter Bajka, 725 Casita Way, Los Altos, Calif. 94022

Filed Aug. 18, 1980, Ser. No. 178,931
Int. Cl.³ B01D *35/02*; C02B *1/02*
U.S. Cl. 210—742 **29 Claims**



1. Controller means for a pool system, said pool system including a pool; pool related conditioning apparatus including pump means and actuating means coupled to drive said pump means; solar water heating apparatus and non-solar water heating apparatus; and hydraulic circuit means including valve means formed for the flow of pool water to and from said pool, said pump means and said solar water heating and said non-solar water heating apparatus; said controller means including a plurality of sensing apparatus formed and positioned to sense conditions in said pool system and formed to produce a signal in response to said conditions, actuating means formed and coupled to said solar sater heating and said non-solar water heating apparatus for actuation of the same, and programmable input means formed for receipt and storage of input and formed to produce a signal based upon said input, and said controller means further being formed with logic circuit means having logic gates and coupled to said sensing apparatus, said actuating means and said programmable input means for control of the operating parameters of said pool system, wherein the improvement in said controller means comprises:

said sensing apparatus includes:

(i) water temperature sensing means formed and positioned to sense pool water temperature, and

(ii) solar temperature sensing means formed and positioned to sense a radiant temperature proximate said solar water heating apparatus; and

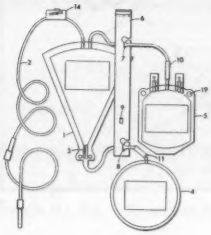
said logic circuit includes comparator means and temperature level setting means connected to said comparator means, said comparator means being formed to compare said pool water temperature sensed by said water temperature sensing means with said radiant temperature and with at least one preset temperature from said temperature level setting means and to input said logic circuit with logic true and logic false signals for controlled actuation of said solar water heating apparatus and said non-solar water heating apparatus and said non-solar water heating apparatus in accordance with a predetermined logic sequence.

4,322,298

CENTRIFUGAL CELL SEPARATOR, AND METHOD OF USE THEREOF

Maxim D. Persidsky, San Francisco, Calif., assignor to Advanced Blood Component Technology, Inc., San Francisco, Calif.

Filed Jun. 1, 1981, Ser. No. 269,379
Int. Cl.³ B01D *21/26*
U.S. Cl. 210—787 **15 Claims**



13. A method of separating PC, PPP from a blood sample, wherein said blood sample is supported in a centrifugal chamber having an inner and an outer end, an injection passageway means from a first cavity to said outer end, a discharge passageway means from said inner end to a second cavity, said second cavity positioned substantially centrifugally outwardly from said inner end of said chamber, said method comprising:

supporting said sample in said chamber;

subjecting said chamber to an initial centrifugal force of at least a predetermined amount to stratify red cells in the sample away from the inner end;

subjecting said chamber to a second centrifugal force while (1) injecting into the outer end of the chamber a displacing liquid from said first cavity at a predetermined volume and flow rate, and (2) displacing PRP from the inner end of the chamber into the second cavity, as the displacing liquid is injected from the first cavity by the second centrifugal force on the blood sample; and

subjecting said second cavity to a third centrifugal force sufficient to separate PRP into PC at one end and PPP at another end.

4,322,299

METHOD OF SIMULTANEOUS AIR-WATER WASH OF MULTIPLE-MEDIA FILTERS

John J. Scholten, and James C. Young, both of Ames, Iowa, assignors to General Filter Company, Ames, Iowa

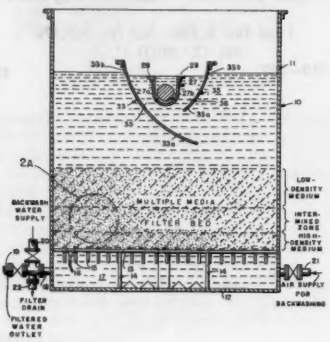
Filed Aug. 18, 1980, Ser. No. 179,050
Int. Cl.³ B01D *23/24*
U.S. Cl. 210—794 **12 Claims**

4. The method of washing a multiple-media filter for removal of filtered solids therefrom, said filter including a tank having a stratified multiple-media bed therein including a distinct upper layer of a medium of lower density and larger effective particle size and at least one distinct lower layer of a medium of higher density and smaller effective particle size, upflow air-water wash means permitting simultaneous washing of said bed with a mixture of air and water followed by wash-

ing with water alone, and wash water collection trough means in the upper portion of said tank above said bed including means interposed in the path of water flow from said tank into said trough for diverting media suspended in the wash water from exiting therewith, comprising the steps in a wash cycle of:

(a) passing a wash mixture of air and water upwardly through said bed simultaneously at air and water flow rates sufficient to cause at least partial intermixing of said distinct layers;

(b) continuing said simultaneous air-water wash flows while



simultaneously removing water from said tank by said withdrawal means and until at least 25% of the water used for the entire wash cycle has exited from said tank;

(c) thereafter passing wash water without said air upwardly through said bed at a rate at least as great as the rate used for simultaneous air-water washing, said water rate being sufficient to cause said intermixed media to at least partially separate; and

(d) continuing said water wash flow until the distinct layers of said bed have reformed to substantially the same extent of separation as before the start of said wash cycle.

4,322,300

DRILLING FLUID

Howard W. Holmquist, Bellingham, Wash., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed May 27, 1980, Ser. No. 153,608
Int. Cl.³ C09K 7/02
U.S. Cl. 252—8.5 C **19 Claims**

1. A water-base drilling, workover or completion fluid composition comprising a suspension of clayey material in an aqueous medium and an effective amount of a fluid loss control agent to control fluid loss, said fluid loss control agent being a water-soluble sulfonated phenol-formaldehyde-phenol resin prepared by

(a) reacting phenol sulfonic acid witl. formaldehyde in an aqueous medium at a pH in the range of 8 to 9.5 until from about 0.9 to 1.3 moles of formaldehyde per mole of phenol sulfonic acid has reacted with the phenol sulfonic acid,

(b) adding phenol to the pre-reacted mixture in a mole ratio of 0.5 to 0.7 moles of phenol per mole of phenol sulfonic acid and reacting the resulting mixture in the presence of formaldehyde and additional alkali until a cloud point is obtained at a pH in the range of 10 to 11, said formaldehyde being present in the resulting mixture in an amount such that the mole ratio of the sum of formaldehyde present in the resulting reaction mixture and the formaldehyde reacted with the phenol sulfonic acid is in the range of from 1 to 1.6 per mole of the sum of the phenol sulfonic acid and the added phenol,

(c) adding additional alkali and continuing the reaction at a pH in the range of 11 to 12 until the viscosity of the final reaction mixture is at least 30 cps at a solids concentration of about 45 to 50% at 25° C.

4,322,301

DRILLING FLUID COMPOSITION

Kenneth A. E. Blackmore, Bellingham, Wash., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Jun. 10, 1980, Ser. No. 158,243
Int. Cl.³ C09K 7/02
U.S. Cl. 252—8.5 A **48 Claims**

1. A water-base salt or gypsum containing drilling fluid comprising a suspension of a clay material and an effective dispersing amount of a mixture of a graft copolymer which is the water-soluble reaction product of lignosulfonate and an acrylic compound selected from the group consisting of acrylic acid, acrylonitrile, acrylamide, and methyl and ethyl esters of acrylic acid and a water-soluble phosphate compound which is a phosphoric acid, condensed phosphoric acid or salt thereof, said reaction product being prepared by reacting lignosulfonate with from 5 to 30% of the acrylic compound using a free radical initiator, said reaction product having a weight average molecular weight not exceeding 80,000 and said phosphate compound being present in an amount, expressed as phosphorous, in the range of from 0.5 to 5 weight percent of the reaction product.

9. A water-base drilling fluid comprising a suspension of a clay material and an effective dispersing amount of a graft copolymer which is the water-soluble reaction product of lignosulfonate and an acrylic compound selected from the group consisting of acrylic acid, acrylonitrile, acrylamide, and methyl and ethyl esters of acrylic acid, combined with a water-soluble compound of a metal selected from the group consisting of iron, titanium, manganese, zinc, copper, and chromium, said reaction product being prepared by reacting lignosulfonate with from 5 to 30% of the acrylic compound using a free radical initiator, said reaction product having a weight average molecular weight not exceeding 80,000, said metal compound being combined with the reaction product in an amount such that at least 0.6 weight percent of the metal, based upon the reaction product is present, said drilling fluid further being contaminated with non-swelling clays or shales.

4,322,302

AGENT FOR THE LIQUID PARAFFIN WAXING OF YARNS

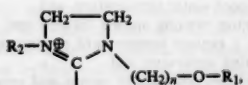
Rolf Kleber, Neu-Isenburg, and Lothar Jaeckel, Flörsheim am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,036
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1979, 2927027
Int. Cl.³ D06M 13/02, 13/38, 13/18
U.S. Cl. 252—8.8 **2 Claims**

1. Agent for the wet paraffin waxing of yarns which consists of

(a) from 5 to 20% of paraffin, melting range of 45° to 60° C.;

(b) from 2 to 10% of one or several alkyl imidazolines of the formula I

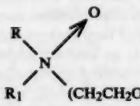


I

in which

R is alkyl, alkenyl or hydroxyalkyl, each with 12 to 22 carbon atoms,
R_1 is hydrogen or C_1–C_{22}-saturated or unsaturated aliphatic or aromatic acyl,
R_2 is hydrogen, C_1–C_4-alkyl or C_1–C_4-hydroxyalkyl,
n is a number of from 2 to 6, and
X is a halogen anion, a C_1–C_4-alkyl sulfate anion, a C_1–C_4-dialkyl phosphate anion, or a C_1–C_4-alkyl carboxylate anion;

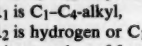
(c) from 1 to 5% of one or several aminoxides of the formula II



II

in which
R is C_8–C_{12}-alkyl or alkenyl,
R_1 is C_1–C_4-alkyl,
R_2 is hydrogen or C_1–C_4-alkyl, and
n is a number of from 0 to 6, and

(d) from 5 to 20% of one or several polyglycol ethers of the formula III



III,

in which
R is C_8–C_{18}-alkyl or alkenyl and
n is a number of from 3 to 12,
as well as water ad 100%.

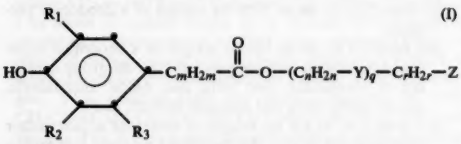
4,322,303

DITHIOPHOSPHATE STABILIZERS

Siegfried Rosenberger, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

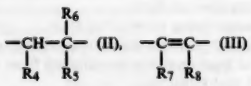
Filed Sep. 10, 1980, Ser. No. 185,841
Claims priority, application Switzerland, Sep. 18, 1979, 8417/79
Int. Cl.³ C08K 5/51; C07C 161/00
U.S. Cl. 252—46.6 **12 Claims**

1. A compound of formula I



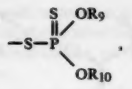
(I)

wherein R_1 and R_2 independently of one another are each C_1–C_{12}-alkyl, or they are phenyl, C_7–C_9-aralkyl or C_5–C_7-cycloalkyl, each of which is unsubstituted or substituted by 1 to 3 alkyl groups having a total of 1 to 12 C atoms, and R_2 in addition is hydrogen or chlorine, R_3 is hydrogen or methyl, m is nought, 1, 2, 3 or 4, n and r independently of one another are each an integer from nought to 20 inclusive, q is 1, 2 or 3, with the proviso that (n·q)+r is an integer from nought to 24 inclusive, and Y is a group of the formula II or III



(II), (III)

in which R_4 and R_5 are each hydrogen or hydroxyl, and at least one of the radicals R_4 and R_5 is a group of the formula IV

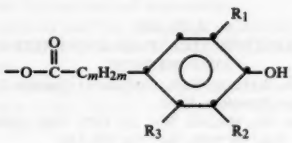


(IV)

R_6 is hydrogen or methyl, one of the radicals R_7 and R_8 is hydrogen, and the other is a group of the formula IV, wherein R_9 and R_{10} independently of one another are each C_1–C_{30}-alkyl or C_2–C_{10}-alkoxyalkyl, or they are phenyl, C_7–C_9-aralkyl or C_5–C_7-cycloalkyl, each of which is unsubstituted or substituted by 1 to 3 alkyl groups having a total of 1 to 12 C atoms, or R_9 and R_{10} together are a group of the formula V

(V)

wherein t is nought or 1, and R_{11}, R_{12}, R_{13}, R_{14}, R_{15} and R_{16} independently of one another are each hydrogen or methyl, and Z is hydrogen or a group of the formula VI



(VI)

in which the symbols R_1, R_2, $-R_3$ and m have the meanings defined above.

12. A lubricant containing an effective stabilizing amount of a compound of the formula I according to claim 1.

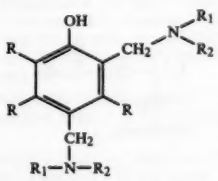
4,322,304

BIS(DISUBSTITUTED AMINOMETHYL)PHENOLS AS ASHLESS HYDROCARBON ADDITIVES

Robert M. Parlman, and Lyle D. Burns, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

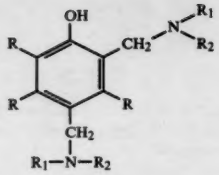
Filed Apr. 29, 1980, Ser. No. 145,183
Int. Cl.³ C10M 1/32
U.S. Cl. 252—51.5 R **16 Claims**

1. An ashless hydrocarbon fuel composition comprising a gasoline-containing hydrocarbon fuel for an internal combustion engine and bis(disubstituted aminomethyl)phenol corresponding to the formula



wherein R is hydrogen or an alkyl radical having 1 to 6 carbon atoms, R_1 and R_2 are alkyl radicals having 1 to 6 carbon atoms with the proviso that R_1 and R_2 taken together can be any alkylene or alkylene ether radical having 4 to 6 carbon atoms.

5. An ashless lubricating composition comprising a lube stock and bis(disubstituted aminomethyl)phenol corresponding to the formula



wherein R is hydrogen or an alkyl radical having 1 to 6 carbon atoms, R_1 and R_2 are alkyl radicals having 1 to 6 carbon atoms with the proviso that R_1 and R_2 taken together can be any alkylene or alkylene ether radical having 4 to 6 carbon atoms.

4,322,305

DEPOSIT CONTROL ADDITIVES AND THEIR FUEL COMPOSITIONS

Robert A. Lewis, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 960,345, Nov. 13, 1978. This application Sep. 29, 1980, Ser. No. 192,146

Int. Cl.³ C10M *1/32*

U.S. Cl. 252—51.5 A **9 Claims**

1. A lubricating oil composition comprising a major amount of an oil of lubricating viscosity and from 0.01 to 10 weight percent of a hydrocarbyl carbonate comprising a hydrocarbyl group of from 500 to 10,000 molecular weight and a hydroxyl and/or tertiary amino-containing group of from about 80 to about 700 molecular weight.

4,322,306

RETARDING ACIDIZING FLUIDS

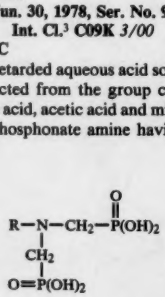
Walter R. Dill, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jun. 30, 1978, Ser. No. 920,889

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—8.55 C **15 Claims**

1. A chemically retarded aqueous acid solution comprised of water, an acid selected from the group consisting of hydrochloric acid, formic acid, acetic acid and mixtures of such acids and an organic diphosphonate amine having the general formula:



wherein:

R is an alkyl group having in the range of from about 8 to about 16 carbon atoms,

said acid being present in said aqueous acid solution in an amount in the range of from about 5% to about 28% by weight of said solution, and

said organic diphosphonate amine being present in said aqueous acid solution in an amount in the range of from about 0.14% to about 1.8% by weight of said solution.

4,322,307

PROCESS FOR ALLEVIATING SULFUR DEPOSITION IN SOUR GAS WELLS

Roland Kettner, Heist, Fed. Rep. of Germany, assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 21, 1980, Ser. No. 170,422

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1979, 2941728

Int. Cl.³ E21B *43/00*

U.S. Cl. 252—8.55 B **2 Claims**

1. In a process for alleviating sulfur deposition in a well penetrating a subterranean formation and producing sour gas wherein a sulfur solvent is circulated into said well and produced from said well with said gas, the improvement comprising employing as said solvent an alkyl naphthalene mixture containing C_1–C_4 alkyl naphthalenes in an amount within the range of 70–90 weight percent, higher-boiling naphthalenes in an amount within the range of 5–15 weight percent, and containing no more than 10% by weight of naphthalene, said mixture having an initial boiling point of at least 230° C., a flash point greater than 101° C., and a freezing point of less than 0° C., said solvent admixed with a hydrocarbon carrier oil in a concentration within the range of 10–60 weight percent, said carrier oil having a boiling range of from 280°–400° C., a specific gravity within the range of 0.85–0.9 and a viscosity at 20° C. of from 14–30 centistokes.

4,322,308

DETERGENT PRODUCT CONTAINING DEODORANT COMPOSITIONS

David C. Hooper, Ashford; George A. Johnson, and Donald Peter, both of Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 77,709, Sep. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 878,092, Feb. 15, 1978, abandoned, which is a continuation-in-part of Ser. No. 933,931, Aug. 15, 1978, Pat. No. 4,289,641. This application Feb. 1, 1980, Ser. No. 117,724

Claims priority, application United Kingdom, Feb. 15, 1977, 6249/77; Jan. 12, 1978, 1285/78

The portion of the term of this patent subsequent to Sep. 8, 1998, has been disclaimed.

Int. Cl.³ C11D *9/44, 9/50*

U.S. Cl. 252—107 **19 Claims**

1. A deodorant soap composition comprising:

(i) from about 1 to about 99% by weight of soap;

(ii) from 0.01 to about 10% by weight of a deodorant perfume;

(iii) from 0.1 to about 5% by weight of a deodorant other than a deodorant perfume selected from the group consisting of germicides, zinc salts, zinc oxide, antioxidants, citrate esters, diols and mixtures thereof; and

(iv) from 0 to 98.8% by weight of detergent adjunct other than included in (iii); the deodorant perfume comprising from 45 to 100% by weight of deodorant components, said components having a lipoxidase-inhibiting capacity of at least 50% or a Raoult variance ratio of at least 1.1, said components being classified into six classes consisting of:

Class 1: phenolic substances,

Class 2: essential oils, extracts, resins and synthetic oils,

Class 3: aldehydes and ketones,

Class 4: polycyclic compounds,

Class 5: esters

Class 6: alcohols, provided that where a component can be classified into more than one class, it is placed in the lower or lowest numbered class;

said components being so selected that

(a) the deodorant perfume contains at least five components of which at least one must be selected from each of Class 1, Class 2 and Class 4;

(b) the deodorant perfume contains components from at least 4 of the 6 classes; and

(c) any component present in the deodorant perfume at a

concentration of less than 0.5% by weight of said composition is eliminated from the requirements of (a) and (b); the composition having an Odour Reduction Value within the range of from 0.50 to 3.5 as measured by the Odour Reduction Value Test.

4,322,309

COMPOSITION CAPABLE OF REMOVING HYDROPHILIC AND HYDROPHOBIC CONTAMINANTS FROM SURFACES

William M. Rinehart, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.

Continuation of Ser. No. 34,195, Apr. 27, 1979, abandoned. This application Jan. 13, 1981, Ser. No. 224,792

Int. Cl.³ C11D *3/44, 7/50*

U.S. Cl. 252—171 **1 Claim**

1. A cleaning and drying composition consisting essentially of, wherein all percentages are by weight, based upon the total weight of the composition taken as 100%:

about 30% ethanol;

about 50% of a compound selected from the group consisting of methylene chloride, trichlorofluoromethane and mixtures thereof; and

about 20% of additional material, comprising a chlorinated hydrocarbon selected from the group consisting of 1,1,1-trichloroethane, perchloroethylene, 1,1,2-trichloroethane, propylene dichloride and mixtures thereof.

said composition having a flash point of greater than about 100° F., the ability to absorb moisture and dissolve a variety of organic materials, and the property of becoming cloudy when excessive moisture has been absorbed thereby.

4,322,310

CHIRAL SUPPORTS FOR RESOLUTION OF RACEMATES

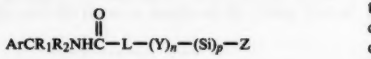
David W. House, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jun. 12, 1980, Ser. No. 158,751

Int. Cl.³ B01D *15/08*

U.S. Cl. 252—184 **9 Claims**

1. A chiral composition of the structure



where Ar is an aryl group; R_1 is an alkyl group containing from 1 to about 10 carbon atoms; R_2 is selected from the group consisting of hydrogen and an alkyl group containing from 1 to about 10 carbon atoms, with R_2 being different from R_1; L is selected from the group consisting of oxygen, sulfur, and nitrogen; Y is selected from the group consisting of CH_2, CH_2CH_2O, and CH_2CHCH_3O; n is an integer from 1 to about 10; p is 0 or 1; Z is a solid support selected from the group consisting of silica, alumina, glass, and ceramic materials; and where the carbon atom interposed between the aryl group and nitrogen atom of said structure is a chiral center.

4,322,311

PROCESS FOR PRODUCING CONTROLLED POROSITY MICROCAPSULES

Franklin Lim, Richmond, and Richard D. Moss, Chester, both of Va., assignors to Damon Corporation, Needham Heights, Mass.

Continuation of Ser. No. 931,177, Aug. 4, 1978, abandoned, which is a continuation-in-part of Ser. No. 606,166, Aug. 20, 1975. This application Apr. 25, 1980, Ser. No. 143,932

The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.

Int. Cl.³ B01J *13/02*

U.S. Cl. 252—316 **23 Claims**

1. A process for encapsulating a chemically active material within a membrane of a selected porosity, said process comprising the steps of:

A. solubilizing said material in water together with a water soluble first monomer selected from the group consisting of multifunctional amines, polyols, and diols to produce an aqueous phase;

B. emulsifying the aqueous phase in a continuous phase comprising a hydrophobic solvent;

C. adding a substantially water insoluble second monomer selected from the group consisting of multifunctional acid halides, diacids, diisocyanates, and multifunctional sulfonyl halides to said emulsion to produce porous membranes comprising a polymer formed by interfacial polymerization about the members of the aqueous, discontinuous phase, said first and second monomers having differing solubility characteristics and being capable of reacting by polycondensation or polyaddition;

D. adding hydrophobic solvent-miscible material to said hydrophobic solvent to vary the polarity of said continuous phase, thereby to alter the affinity of said first monomer for the continuous phase during the polymerization of said first and second monomers;

E. allowing said first and second monomers to further polymerize at the interface of the altered continuous phase; and

F. quenching the interfacial polymerization when microcapsules of the selected porosity have been produced.

4,322,312

PROCESS FOR PURIFICATION OF NON-IONIC EMULSIFIERS

Gunther Boehmke, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 99,123

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854541

Int. Cl.³ B01F *17/44, 17/42;* **C07C** *43/11, 43/205*

U.S. Cl. 252—356 **15 Claims**

1. A process for the purification of non-ionic emulsifiers of the type comprising addition products of alkylene oxides and compounds containing hydroxyl groups, carboxyl groups or carboxamide groups from impurities originating from their preparation, characterized in that the reaction mixtures are dissolved in organic, water-immiscible organic solvents, the solutions are treated with water, the resultant two layers are allowed to settle and the lower aqueous layer containing the impurities is separated off from the bottom.

4,322,313

STABILIZED MULTI-PURPOSE BLOOD DILUENT

Christiaan E. Raaijmakers, Deventer, Netherlands, assignor to J. T. Baker Chemicals B.V., Deventer, Netherlands

Filed Oct. 2, 1980, Ser. No. 193,095

Int. Cl.³ G01N *33/16;* **C09K** *3/00*

U.S. Cl. 252—408 **3 Claims**

1. A multi-purpose blood diluent, which is both isotonic and osmotically balanced relative to the solutions in blood cells, comprising:

(a) an osmotically balanced solution of the chlorides of sodium and potassium and the mono- and di-hydrogen phosphate salts of sodium and potassium,

(b) an ethylene diamine tetraacetic acid compound,

(c) lithium chloride, and

(d) phenylethanol,

said diluent being an aqueous electrolytic solution maintained at a pH between 7.0 and 8.5 and at an osmolality between 300 and 380 milliosmoles.

4,322,314

PROCESS FOR SEPARATING COBALT COMPONENT FROM HYDROESTERIFICATION REACTION MIXTURE

Takeru Onoda, Tokyo; Keisuke Wada, Yokohama; Hironori Kageyama; Hideki Yamanouchi, both of Tokyo, and Kenji Karube, Toride, all of Japan, assignors to Mitsubishi Chemical Ind. and Lion Corporation, both of Tokyo, Japan

Filed Mar. 7, 1980, Ser. No. 128,149

Claims priority, application Japan, Apr. 21, 1979, 54-49475

Int. Cl.[3] B01J *31/40;* C01G *59/02;* C07C *67/38;* C11C *3/02*

U.S. Cl. 252—412 13 Claims

1. A process for separating a cobalt component from a hydroesterification reaction mixture obtained by reacting a polyhydric alcohol with an olefin and carbon monoxide in the presence of a cobalt carbonyl complex and a pyridine base to give a fatty acid ester of said polyhydric alcohol, which comprises:

contacting (a) pyridine or γ-picoline and (b) water with said hydroesterification reaction mixture containing the cobalt component and said ester to separate said reaction mixture into two phases consisting of a phase containing said ester and a phase containing said cobalt component, wherein the weight ratio of pyridine or γ-picoline to said ester is 0.5 to 5 and the weight ratio of water to pyridine or γ-picoline is 0.05 to 10.

2. A process according to claim 1 wherein (a) pyridine or γ-picoline and (b) water are brought into contact with a residue obtained by separating unreacted olefin, pyridine base, or mixture of unreacted olefin and pyridine base from said hydroesterification reaction mixture.

12. A process for separating a cobalt component from a hydroesterification reaction mixture, comprising:

contacting a hydroesterification reaction mixture, obtained by reacting a polyhydric alcohol, an olefin, and carbon monoxide in the presence of a cobalt carbonyl complex and pyridine or γ-picoline wherein said pyridine or γ-picoline is present at a weight ratio of 0.5 to 5 to a fatty acid ester of said polyhydric alcohol obtained by said reacting, with water to separate said reaction mixture into two phases consisting of a phase containing said ester and a phase containing said cobalt component.

4,322,315

REGENERATION OF A RUTHENIUM CONTAINING HYDROGENATION CATALYST

Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 25, 1980, Ser. No. 143,670

Int. Cl.[3] B01J *21/20, 23/96;* C07C *85/12*

U.S. Cl. 252—415 13 Claims

1. A regeneration process comprising contacting under regeneration conditions an at least partially deactivated ruthenium-containing catalyst with a regeneration agent consisting essentially of carbon tetrachloride at least partially in the liquid phase; wherein said catalyst has been used to hydrogenate a branched-chain unsaturated aliphatic dinitrile.

2. A regeneration process comprising contacting an at least partially deactivated ruthenium-containing catalyst with a regeneration agent consisting essentially of carbon tetrachloride; wherein said catalyst has been used to hydrogenate a branched-chain unsaturated aliphatic dinitrile; and wherein the temperature is in the range of from about 10° to about 100° C. and the pressure is in the range of from about atmospheric to about 1000 psig.

13. A process according to claim 1 or 2 wheren said carbon tetrachloride is decanted from said catalyst, said catalyst is placed in a reactor, nitrogen gas is passed through said reactor to removal residual carbon tetrachloride from said catalyst, and said catalyst is reduced.

4,322,316

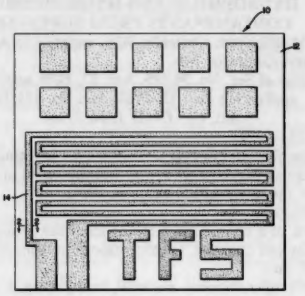
THICK FILM CONDUCTOR EMPLOYING COPPER OXIDE

Jason D. Provance, and Kevin W. Allison, both of Santa Barbara, Calif., assignors to Ferro Corporation, Cleveland, Ohio

Filed Aug. 22, 1980, Ser. No. 180,298

Int. Cl.[3] H01B *1/02*

U.S. Cl. 252—512 22 Claims



8. A thick film conductor paste having a long shelf life and being fireable in air to produce on a substrate a circuit having a resistivity of less than 10 ohms per square, said paste consisting essentially of:

A. 10 to 20 weight percent particulate boron having a particle size of 0.5 to 15 microns; and

B. 5 to 25 weight percent glass frit having a particle size of 0.5 to 15 microns, the glass of said glass frit being a lead-borosilicate glass; and

C. the balance essentially a copper oxide selected from the group consisting of cuprous oxide and cupric oxide;

wherein all weight percents are on a dry basis;

said paste being dispersed in an inert liquid vehicle present in an amount sufficient to give the paste a viscosity of 800 to 1200 poise.

4,322,317

COMPOSITION FOR CHALCOGENIDE ELECTRODES

Bhaskara M. L. Rao, Fanwood, and Robert A. Weiss, Summit, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 3, 1980, Ser. No. 126,688

Int. Cl.[3] H01B *1/06*

U.S. Cl. 252—520 3 Claims

1. An elastomeric composition for chalcogenide electrodes consisting essentially of:

(a) a chalcogenide material in a particulate form consisting of one or more compounds selected from a group consisting of the sulfides, selenides and tellurides of titanium, zirconium, hafnium, niobium, tantalum, molybdenum, and vanadium; and

(b) less than about 10 weight percent of a neutralized sulfonated elastomeric polymer formed from an EPDM terpolymer, polystyrene or a butyl rubber and having less than about 6 mole percent neutralized sulfonate groups per 100 grams of said polymer.

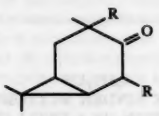
4,322,318

NOVEL PRENYL 4-CARANONES

Dietmar Lamparsky, Wangen, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 96,721, Nov. 21, 1979, Pat. No. 4,278,817.
This application Oct. 9, 1980, Ser. No. 195,540
Claims priority, application Switzerland, Dec. 5, 1978, 12390/78
Int. Cl.³ A61K *7/46*
U.S. Cl. 252—522 R 8 Claims

1. A fragrance composition comprising an olfactorily effective amount of a compound of the general formula



I

wherein one of the R symbols represents a 3-methyl-2-butenyl group and the other represents a hydrogen atom, and at least one other fragrance material.

4,322,319

RUBBER COMPOSITION CONTAINING CROSSLINKABLE PROCESSING AID

Hiroharu Ikeda, Machida; Yasuyuki Shimozato, Yokohama, and Kazuo Sekine, Tokyo, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1980, Ser. No. 182,584
Claims priority, application Japan, Aug. 29, 1979, 54-109223; Sep. 5, 1979, 54-112858
Int. Cl.³ C08L *7/00, 9/00, 9/06*
U.S. Cl. 525—194 11 Claims

1. A rubber composition comprising (A) 100 parts by weight of a rubber, (B) 5–50 parts by weight of a low molecular weight diene copolymer containing a glycidyl group-containing monomer or chloromethylstyrene and having an intrinsic viscosity of 0.2 to 1.3 dl/g as measured in toluene at 30° C., (C) a specified crosslinking agent reactive with the glycidyl or chloromethyl group of the copolymer (B), and (D) 0.2 to 7 parts by weight, per 100 parts by weight of the rubber (A), of sulfur.

4,322,320

PROCESS FOR FORMULATING SILICONE RUBBER PRODUCTS

Joseph C. Caprino, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,123
Int. Cl.³ C08L *1/00*
U.S. Cl. 523—212 16 Claims

1. A process for formulating an addition cured silicone rubber composition, comprising the steps of: mixing 95 to 99.5 parts by weight of Component A, with 0.5 to 5.0 parts of Component B and 0.5 to 5.0 parts Component C; and curing said mixture; wherein (i) Component A is a silicone base compound consisting essentially of 100 parts by weight of a vinyl-containing linear polysiloxane of the formula,

$$R_aSiO_{\frac{4-a}{2}}$$

and blends of such polysiloxanes, where R is selected from the class consisting of alkyl radicals of 1 to 8 carbon atoms, vinyl radicals, phenyl radicals, fluoroalkyl radicals of 3 to 10 carbon atoms and mixtures thereof, where the vinyl radical unsaturation in said polymer is at least 0.005 mole percent, and a varies from 1.98 to 2.01, and 0.5 to 50.0 parts by weight of a hydrogen-containing polysiloxane; and (ii) Component B is a cure agent consisting essentially of approximately 100 parts of said vinyl-containing polysiloxane containing therein at least 0.40 parts of an inhibitor compound having at least one radical of the formula —C—O—O—H, and at least 0.001 parts platinum per one hundred parts vinyl polymer in Component B, and (iii) Component C is a cure modifying agent consisting essentially of 100 parts of said vinyl-containing polysiloxane containing at least 0.10 parts of said inhibitor compound.

4,322,321

LOW-TEMPERATURE CURABLE SATURATED EPOXY RESIN COMPOSITIONS

Mark F. Dante, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 22, 1981, Ser. No. 227,126
Int. Cl.³ C08L *91/00*
U.S. Cl. 523—454 9 Claims

1. A room-temperature curable epoxy coating composition prepared by reacting (1) a saturated epoxy resin, (2) a curing amount of a polyamide, and (3) from about 5% to about 50% by weight, based on the total weight of epoxy resin and polyamide, of a cellulose acetate butyrate for from about 15 to about 60 minutes in the presence of an organic solvent, before applying the composition to a suitable substrate.

4,322,322

METHOD FOR PREPARING A WATER-CONTAINING VINYL ACETATE POLYMER DISPERSION, DISPERSION THUS PREPARED AND PROTECTIVE COLLOID USED THEREBY

Peter F. T. Lambrechts, Mechelen, and Jozef H. R. Van Der Meeren, Borsbeke, both of Belgium, assignors to "Graanderivaten Raffinaderijen Amylum", in het kort: "G.R. Amylum", Vroeger Glucoseries Reunies Genoemd, Sint-Jans-Molenbeek, Belgium

Filed Jun. 20, 1980, Ser. No. 161,360
Claims priority, application Belgium, Jul. 3, 1979, 57921
Int. Cl.³ C08L *3/04*
U.S. Cl. 524—734 5 Claims

1. A method for preparing a water-containing vinyl acetate polymer dispersion, comprising adding vinyl acetate monomer and initiator to a water solution from an emulsifier and an amount, between 0.1 and 6 weight % from the monomer amount, of hydroxypropyl and/or hydroxyethyl starch, in which the emulsifier amount is equal to 0.8 to 2.3 weight % from the monomer amount, and the degree of substitution of the starch lies between 0.9 and 1.6 hydroxypropyl groups per anhydroglucose unit for the hydroxypropyl starch and between 0.9 and 2.7 hydroxyethyl groups per anhydroglucose unit for the hydroxyethyl starch.

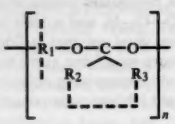
4,322,323

ERODIBLE DEVICE COMPRISING SURFACTANT FOR MODIFYING THE RATE OF EROSION OF THE DEVICE

Richard C. Capozza, Paradise Valley, Ariz., assignor to ALZA Corporation, Palo Alto, Calif.

Filed Dec. 1, 1980, Ser. No. 211,510
Int. Cl.³ C08K *5/09*
U.S. Cl. 424—78 8 Claims

1. A device for delivering a beneficial agent at a controlled rate over a prolonged period of time, wherein the device comprises (a) a shaped body sized and adapted for delivering an agent to an environment of use, the body formed of an erodible release rate controlling material, which material comprises a polymer of the formula:



wherein, R_1 is a member selected from the group consisting of divalent, trivalent and titravalent radicals consisting of alkylene of 1 to 10 carbons; alkenylene of 2 to 10 carbons; alkyleneoxy of 2 to 6 carbons; cycloalkylene of 3 to 7 carbons; cycloalkylene of 3 to 7 carbons substituted with an alkyl of 1 to 7 carbons, alkoxy of 1 to 7 carbons, alkenyl of 2 to 7 carbons and alkylene of 1 to 10 carbons; cycloalkenylene of 4 to 7 carbons; cycloalkenylene of 4 to 7 carbons substituted with an alkyl of 1 to 7 carbons, an alkoxy of 1 to 7 carbons, an alkenyl of 2 to 7 carbons, and an alkylene of 1 to 7 carbons; arylene of 6 to 12 carbons; arylene of 6 to 12 carbons substituted with an alkyl of 1 to 7 carbons, an alkoxy of 1 to 7 carbons, and an alkenyl of 2 to 7 carbons; R_2 and R_3 are selected from the group consisting of alkyl of 1 to 7 carbons; alkenyl of 2 to 7 carbons, alkoxy of 1 to 7 carbons; alkylene of 1 to 7 carbons, alkenylene of 2 to 7 carbons; alkyloxy of 1 to 7 carbons; alkenyloxy of 2 to 7 carbons; alkyleneoxy of 1 to 7 carbons; alkenyleneoxy of 2 to 7 carbons; aryloxy of 6 to 12 carbons; aralkyleneoxy of 8 to 12 carbons; aralkenyleneoxy of 8 to 12 carbons; oxa; OR_1O wherein R_1 is as defined above; a heterocyclic ring of 5 to 8 carbons and oxygen atoms formed when R_2 and R_3 are taken together; a heterocyclic ring of 5 to 8 carbon and oxygen atoms substituted with an alkyl of 1 to 7 carbons, an alkoxy of 1 to 7 carbons and an alkenyl of 2 to 7 carbons formed when R_2 and R_3 are taken together; a fused polycyclic ring of 8 to 12 carbon and oxygen atoms formed when R_2 and R_3 are taken together; a fused polycylic ring of 8 to 12 carbons and oxygen atoms substituted with an alkyl of 1 to 7 carbons, an alkoxy of 1 to 7 carbons, and an alkenyl of 2 to 7 carbons; wherein at least one of R_2 and R_3 is selected from the group consisting of alkoxy, alkenyloxy, and OR_1O; and R_2 and R_3 are taken together a member selected from the group of heterocyclic and fused polycyclic rings having at least one oxygen atom in the ring; and wherein n is greater than 10; (b) a beneficial agent in the body; and (c) a surfactant selected from the group consisting of anionic, cationic and nonionic surfactants.

4,322,324

AMPHO-IONIC GROUP-CONTAINING ALKYD RESINS

Ryuzo Mizuguchi, Yawata; Shin-ichi Ishikura, Tsuzuki, and Keizo Ishii, Ashiya, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

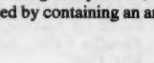
Filed Nov. 20, 1980, Ser. No. 208,641

Claims priority, application Japan, Apr. 26, 1980, 55/56048

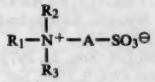
Int. Cl.³ C08G *63/68*

U.S. Cl. 528—290 **11 Claims**

1. An alkyd resin composition suitable for use in the preparation of solvent type coating composition, said resin composition being characterized by containing an amphoionic group of the formula:



wherein A is C_1–C_6 alkylene or phenylene, said resin composition comprising the reaction product of: (a) a polyol, (b) a polybasic carboxylic acid, and (c) an ampho-ionic compound of the formula:



wherein A has the above-indicated values, R_1 is alkyl of 1–20 carbon atoms containing at least one hydroxyl group, R_2 and R_3 are each hydrogen or alkyl of 1–20 carbon atoms which is unsubstituted or substituted by at least one sulfo or hydroxyl group.

4,322,325

WATER-DILUTABLE BINDER MIXTURE, AND ITS USE FOR THE PRODUCTION OF A TWO-LAYER METALLIC PAINT COATING

Klaus Esser; Helmut Dürr, both of Frankfurt am Main, and Dieter Plath, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 163,968

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926584

Int. Cl.³ C09D *3/64, 5/10, 5/38*

U.S. Cl. 523—457 **10 Claims**

1. A water-dilutable binder composition for the preparation of a metallic base paint comprising

(A) a water-soluble condensation product derived from

(a) a saturated or unsaturated oil-free polyester containing OH-groups having been prepared from at least one polycarboxylic acid and at least one polyhydric alcohol,

(b) a polycarboxylic acid mixture containing trimellitic acid,

(c) at least one epoxidized fatty oil, and

(d) a basic compound;

(B) an additive selected from the group consisting of one or more metal powders, one or more metal powders in combination with at least one other pigment, and one or more metal powders in combination with at least one other dyestuff; and

(C) at least one water-miscible (compatible) solvent.

8. A process for the preparation of a two-layer metallic paint coating consisting of a first metallic base paint layer and a second covering lacquer layer on a substrate, which comprises applying a binder composition according to claim **1** diluted with water to the substrate to form the metallic base paint layer, drying the base layer to obtain a tack-free surface, and then applying a covering lacquer layer to the dried base layer.

4,322,326

ETHYLENE-VINYL ESTER COPOLYMER BLENDED WITH DIBASIC ACID-MODIFIED ROSIN ESTER

Lorrin W. Pyle, Cincinnati, Ohio, assignor to National Distillers & Chemical Corp., New York, N.Y.

Filed Feb. 9, 1981, Ser. No. 232,794

Int. Cl.³ C08L *93/04, 93/00*

U.S. Cl. 524—513 **7 Claims**

1. A composition comprising a mixture of ethylene-vinyl ester copolymer containing at least about 55% by weight of interpolymerized vinyl ester and a dibasic acid-modified rosin ester of a rosin acid and a polyhydric alcohol containing from 2 to 6 hydroxyl groups, said dibasic acid-modified rosin ester being present in said composition at a level of at least about 30% by weight.

4,322,327

SLOW-CURING WATER-CURABLE URETHANE PREPOLYMER COMPOSITION

Naoki Yoshimura; Kenji Hijikata, and Noritaka Hosokawa, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

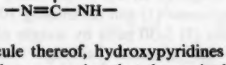
Filed Oct. 14, 1980, Ser. No. 196,831

Claims priority, application Japan, Oct. 19, 1979, 54/134756; Feb. 5, 1980, 55/12877; Feb. 12, 1980, 55/15745; Jul. 22, 1980, 55/100172

Int. Cl.³ C08L 75/00

U.S. Cl. 524—507 15 Claims

1. A slow-curing water-curable urethane prepolymer composition obtained by reacting (A) a hydrophilic urethane prepolymer which is the reaction product of a polyisocyanate and a hydrophilic polyol prepolymer and has at least two free —NCO groups and (B) a blocking agent selected from a class consisting of heterocyclic compounds having an



structure in the molecule thereof, hydroxypyridines and hydroxyquinolines in such a proportion that the equivalent ratio of the =NH groups or the —OH groups in the blocking agent (B) to the —NCO groups in the hydrophilic urethane prepolymer (A) (=NH or —OH/—NCO) is 0.05 to 2.

4,322,328

MANUFACTURE OF AQUEOUS POLYMER DISPERSIONS AND COATING COMPOSITIONS DERIVED FROM THEM

Clive W. Graetz, Glen Waverly, Australia, and Morice W. Thompson, Cox Green, England, assignors to Imperial Chemical Industries Limited, London, England and Dulux Australia Limited, Melbourne, Australia

Filed Dec. 7, 1979, Ser. No. 102,107

Claims priority, application United Kingdom, Dec. 7, 1978, 47585/78

Int. Cl.³ C08L 33/04

U.S. Cl. 524—458 10 Claims

1. A process for the production of a sterically stabilised dispersion of polymer particles of a size in the range of 0.01 to 10 microns in an aqueous medium, the process comprising the polymerisation in the aqueous medium of one or more ethylenically unsaturated monomers at a temperature which is at least 10° C. higher than the glass transition temperature of the polymer which is formed, in the presence of a free radical initiator which is soluble in the said monomer or monomers and also in the presence of a stabiliser precursor compound which is soluble in the aqueous medium and which contains in the molecule a polymeric component of molecular weight at least 1000 which is solvatable by the aqueous medium and an unsaturated grouping which is capable of copolymerising with the said monomer or monomers, the aqueous medium being a mixture comprising (a) at least 30% by weight of water and (b) not more than 70% by weight of a second constituent which is miscible with water, the nature and proportion of the second constituent being such that the mixture as a whole is capable of dissolving the monomer or monomers being polymerised to the extent of at least 3% by weight but is a non-solvent for the polymer formed, the concentration of free monomer in the polymerisation mixture being maintained throughout the process at a level such that at no time does the free monomer form a separate phase and the total amount of monomer polymerised being such that the resulting dispersion contains at least 20% by weight of polymer.

4,322,329

PROCESS FOR CONTROLLED GELATION OF POLYMERIC SOLUTION (C-971)

Robert D. Lundberg, Bridgewater, N.J.; Dennis E. O'Brien, Houston, Tex.; Henry S. Makowski, deceased, late of Scotch Plains, N.J. (by Patricia H. Makowski, executrix), and Robert R. Klein, Berkeley Heights, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 106,027, Dec. 21, 1979, Pat. No. 4,282,130, which is a continuation-in-part of Ser. No. 930,044, Aug. 1, 1978, abandoned. This application Apr. 3, 1980, Ser. No. 136,837

Int. Cl.³ C08F 8/36

U.S. Cl. 524—389 36 Claims

1. A process for increasing the low shear solution viscosity which includes the steps of:

(a) forming a solvent system of an organic liquid and a polar cosolvent, said polar cosolvent being less than about 15 wt. % of said solvent system, a viscosity of said solvent system being less than about 1,000 cps;

(b) dissolving a neutralized solfonated polymer in said solvent system to form a solution, a concentration of said neutralized sulfonated polymer in said solution being about 0.5 to about 20 wt. %, a viscosity of said solution being about 5 to about 5,000 cps; and

(c) adding about 1 to about 500 volume % water to said solution, said water being immiscible with said solution, with said polar cosolvent transferring from said solution to said water causing the viscosity of said solution or suspension to increase at least a factor of 2 but being less than 50,000 cps.

4,322,330

ADHESIVE FOR FLOOR COVERINGS, PROCESS OF ITS PRODUCTION AND ITS APPLICATION

Ekkehard Merz, and Gerhard Kothe, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 10, 1980, Ser. No. 168,255

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1979, 2931127

Int. Cl.³ C08L 23/00

U.S. Cl. 523—221 11 Claims

1. An adhesive for floor coverings containing

(a) 100 parts by weight of an aqueous polymer dispersion having a solids content of from 30% to 70% by weight of the total weight of said dispersion, the solids content consisting of particles of synthetic resins selected from the group consisting of homopolymers and copolymers of vinyl C_{2-18}-alkanoates, homopolymers and copolymers of olefins and styrene, and homopolymers and copolymers of C_{1-8}-alkyl esters of lower alkenoic acids and C_{4-8}-alkendioic acids, said particles of at least a bimodal particle size distribution wherein the majority of the larger particles is at least twice the size of the majority of the smaller particles and where the majority of the larger particles has a particle size distribution of from 0.5 to 3 μm and the majority of the smaller particles has a particle size distribution of from 0.1 to 1 μm,

(b) from 30 to 120 parts by weight of a plasticizing mixture of (1) from 45% to 100% by weight of a synthetic resin plasticizer/soft resin mixture with 1 part by weight of said plasticizer selected from the group consisting of phthalate plasticizers, sebacinate plasticizers, adipinate plasticizers and phosphate plasticizers per from 1 to 20 parts by weight of said soft resin having a viscosity of 20° C. in the range of from 5 to 50 Pas and a softening point according to Kraemer-Sarnow of between 0° and 15° C., (2) from 0 to 20% by weight of at least one organic solvent, and (3) from 0 to 35% by weight of at least one hard resin having a softening point according to Kraemer-Sarnow of 60° C. to 150° C. and a melting point above 60° C., and

(c) from 0 to 60% by weight of said adhesive of inert finely-divided fillers.

4,322,331

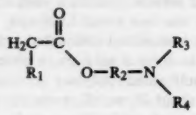
RADIATION POLYMERIZABLE COMPOUNDS AND CONDUCTIVE COATINGS FROM SAME

Gregory D. Shay, Oak Forrest, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Dec. 18, 1980, Ser. No. 217,873
Int. Cl.³ C08L 00/00
U.S. Cl. 524—815 7 Claims

1. A radiation crosslinkable coating which comprises an aqueous solution of a quaternary ammonium salt wherein the salt is obtained by mixing reactive amounts of:

(a) at least one tertiary amine of the formula:



wherein R_1 is H or CH_3, R_2 is an aliphatic radical of from 1 to 6 carbon atoms of aryl of from 6 to 10 carbon atoms, R_3 and R_4 are the same or different and are selected from the group of aliphatic radicals containing from 1 to 10 carbon atoms and aryl radicals containing from 6 to 10 carbon atoms; and

(b) at least one halide having from 2 to 6 halogen atoms and selected from the group consisting of aliphatic halides having from 1 to 10 carbon atoms and arene halides having from 7 to 20 carbon atoms.

4,322,332

HIGH TEMPERATURE PAINT

Raymond B. Hughes, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 24, 1980, Ser. No. 172,013
Int. Cl.³ C08L 75/04
U.S. Cl. 525—424 12 Claims

1. In a high temperature paint containing a resin binder and a pigment, the improvement wherein said resin binder comprises polyethermide reaction product of aromatic bis(etheranhydride) with organic diamine, said reaction product being cross-linked with tri-functional isocyanate agent.

4,322,333

REINFORCED PBT-COPOLYAROMATIC/ALIPHATIC BLOCK COPOLYESTERS

John E. Kochanowski, Monterey, Mass., and Allen D. Wambach, Monroeville, Pa., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 5, 1979, Ser. No. 90,989
Int. Cl.³ C08K 3/34; C08L 67/02
U.S. Cl. 523—521 11 Claims

1. A composition, having improved impact strength, comprising:

(a) a poly(1,4-butylene terephthalate)-copolyaromatic/aliphatic block copolyester resin, alone, or in combination with a poly(1,4-butylene terephthalate) resin and an effective amount of a reinforcing agent, a mineral filler or a combination thereof; and

(b) an effective, impact strength improving amount of (i) a copolymer of ethylene and vinyl acetate; (ii) a terpolymer of ethylene, vinyl acetate, acrylic acid or acrylic acid; or (iii) a mixture of (i) and (ii).

4,322,334

LOW SHRINKAGE UNSATURATED POLYESTER RESIN COMPOSITIONS

Kouji Arakawa; Kanemasa Nomaguchi, and Etsuji Iwami, all of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Dec. 4, 1979, Ser. No. 100,049
Claims priority, application Japan, Dec. 13, 1978, 53-154750
Int. Cl.³ C08L 67/00, 67/02
U.S. Cl. 523—512 8 Claims

1. A low shrinkage unsaturated polyester resin molding composition which consists essentially of component (1) 30–70 parts by weight of an unsaturated polyester obtained by reacting (i) at least one acid selected from the group consisting of terephthalic acid and isophthalic acid and (ii) at least one unsaturated acid selected from the group consisting of maleic anhydride, maleic acid and fumaric acid, with a glycol, said unsaturated polyester having an unsaturated degree (moles of the unsaturated acids in 1,000 g. of the unsaturated polyester) of 1.5–5.0 and an acid value of 18–40; component (2) 70–30 parts by weight of an α,β-ethylenically unsaturated monomer, said components (1) and (2) totaling 100 parts by weight; and component (3) 5–30 parts by weight of a thermoplastic resin having the number average molecular weight of 5,000–500,000.

6. The composition of any one of claims 1 or 2, which also contains at least one adjuvant selected from the group consisting of calcium carbonate, talc, silica sand, silicic acid, aluminum hydroxide, barium sulfate, glass fibre, carbon fibre, organic fibre, pigments and plasticizers.

4,322,335

FAST CRYSTALLIZING BLOCK COPOLYESTER COMPOSITION

Eric Nield, Watton-at-Stone, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sep. 8, 1980, Ser. No. 184,975
Claims priority, application United Kingdom, Sep. 21, 1979, 32818/79
Int. Cl.³ C08K 3/40; C08L 67/02
U.S. Cl. 523—522 7 Claims

1. A fast crystallising polyester composition comprising a block copolyester containing the repeating polymeric segments A and B wherein A is a polymeric segement of ethylene terephthalate units and B is a polymeric segment having a molecular weight in the range 500 to 10,000 and a glass-transition temperature of less than 0° C. the concentration of the segments of B being between 0.05 and 10 mole % of the block copolyester and being selected from the group consisting of polyoxyalkylene glycols and wholly aliphatic polyesters, and 0.1 to 50% by weight of the composition of a crystallisation nucleant which is an at least partially neutralised salt of an ethylenically unsaturated polymer containing pendant carboxyl groups or anhydrides thereof.

4,322,336

COMPATIBLY FILLED/PLASTICIZED POLYMERIC COMPOSITIONS

Jean Machurat, Neuville sur Saone; Jean-Claude Morawski, Chassieu, and Gerard Soula, Meyzieu, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Dec. 19, 1980, Ser. No. 218,265
Claims priority, application France, Dec. 20, 1979, 79 31219
Int. Cl.³ C08K 5/16
U.S. Cl. 524—104 18 Claims

1. In a filled/plasticized polymeric composition of matter, the improvement which comprises a filler/plasticizer compatibilizing amount of an alkenyl succinimide, said alkenyl succinimide being the condensation product of a polyamine with an alkenyl succinic anhydride wherein the alkenyl moiety contains from 3 to 100 carbon atoms.

4,322,337

POLYALKYLPIPERIDINE DERIVATIVES OF s-TRIAZINES AS STABILIZERS

Jean Rody, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

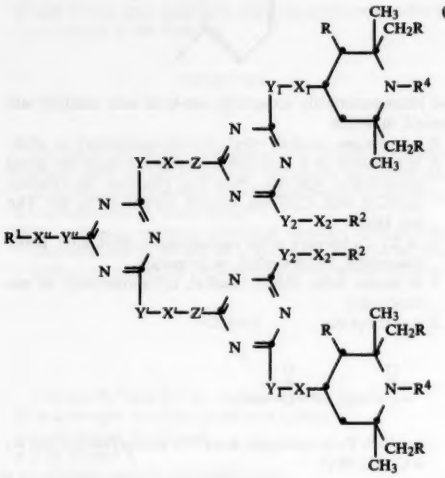
Division of Ser. No. 115,640, Jan. 28, 1980, Pat. No. 4,288,593. This application Dec. 17, 1980, Ser. No. 217,370

Claims priority, application Switzerland, Feb. 6, 1979, 1146/79

Int. Cl.³ C08K *5/34, 5/35*

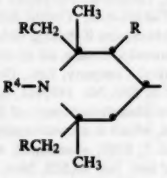
U.S. Cl. 524—100 **10 Claims**

1. A polymer composition stabilized against the action of light, which contains 0.01 to 5% by weight of at least one compound of the formula I



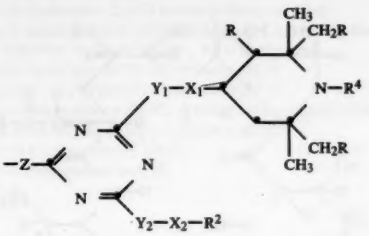
(I)

in which X and X′ are C_2–C_{12}-alkylene, which can be interrupted by —O—, —S— or —NR^3—, or p-xylylene, X″ has one of the meanings defined for X and X′ or is a direct bond or a group —$OCH_2CH_2CH_2$—, the 0 of which is not bonded to Y″, X_1 and X_2 are a direct bond, C_1–C_4-alkylene or a group —$OCH_2CH_2CH_2$—, the 0 of which is not bonded to Y_1 or Y_2, and Y_1, Y_2, Z and Z′ are —O—, —S—, —NH— or —NR^3—, Y, Y′ and Y″ are —O—, —S—, —NH—, —NR^3— or —NR^5—, R is hydrogen or methyl, R^1 is hydrogen, C_1–C_{18}-alkyl, C_2–C_8-alkoxyalkyl, C_2–C_4-hydroxyalkyl, C_5–C_{12}-cycloalkyl, allyl, benzyl, C_6–C_{10}-aryl or phenyl which is substituted by 1 or 2 C_1–C_8 alkyl groups or OH or C_1–C_4-alkoxy or is a polyalkylpiperidinyl group of the formula II



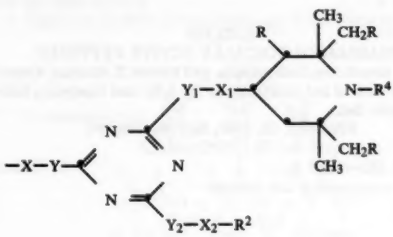
(II)

or, if Y″ is —NR^3— and X″ is a direct bond, R^1 and R^3 together with the N atom form a pyrrolidine, piperidine or morpholine ring, or R^1 is a radical of the formula III



(III)

or the group R^1—X″—Y″— is chlorine, R^2 is C_1–C_{18} alkyl, C_2–C_8 alkoxyalkyl, C_2–C_4 hydroxyalkyl, C_5–C_{12} cycloalkyl, allyl, benzyl, C_6–C_{10} aryl or phenyl which is substituted by 1 or 2 C_1–C_8 alkyl groups or OH or C_1–C_4 alkoxy or is a polyalkylpiperidinyl group of the formula II or, if Y_2 is —NR^3— and X_2 is a direct bond, R^2 and R^3 together with the N atom form a pyrrolidine, piperidine or morpholine ring, R^3 is C_1–C_{18} alkyl, C_2–C_8 alkoxyalkyl, C_2–C_4 hydroxyalkyl, C_5–C_{12} cycloalkyl, allyl, benzyl, C_6–C_{10} aryl or phenyl which is substituted by 1 or 2 C_1–C_8 alkyl groups OH or C_1–C_4 alkoxy or is a polyalkylpiperidinyl group of the formula II, R^4 is hydrogen, Oo, C_1–C_{18}-alkyl, allyl or benzyl and R^5 is a radical of the formula IV



(IV)

4,322,338

DERIVATIVES OF A-30912B NUCLEUS

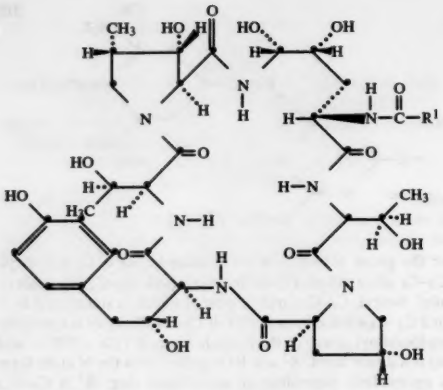
Bernard J. Abbott, Greenwood, and David S. Fukuda, Brownsburg, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 103,314, Dec. 13, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 181,450

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **28 Claims**

1. A compound of the formula:



wherein R^1 is C_6–C_{24} alkyl or C_6–C_{24} alkenyl, provided that when R^1 is alkyl, R^1 cannot be n-heptadecyl; and, when R^1 is alkenyl, R^1 cannot be cis,cis—$CH_3(CH_2)_4CH{=}CHCH_2{-}CH{=}CH(CH_2)_7{-}$.

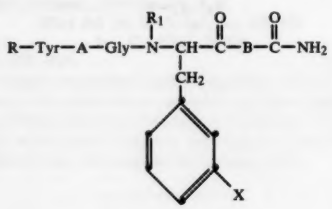
4,322,339

PHARMACOLOGICALLY ACTIVE PEPTIDES

Paul D. Gesellchen, Indianapolis, and Robert T. Shuman, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 20, 1980, Ser. No. 198,896
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 E **57 Claims**

1. A compound of the formula



and pharmaceutically acceptable non-toxic acid addition salts thereof, in which

R is hydrogen, methyl, or ethyl;

A is the residue of a D-amino acid selected from the group consisting of Ala, Abu, Nva, Val, Nle, Leu, Ile, Gly(Al), Gly(Cp), Met, Cys(Me), Met(O), Cys(Me) (O), Ser, Thr, and Hse;

R_1 is hydrogen, C_1–C_3 primary alkyl, cyclopropylmethyl, allyl, or propargyl;

X is bromo, iodo, or chloro; and

B is the residue of a D- or L-amino acid lacking its carboxyl moiety and selected from the group consisting of Gly, Ala, Abu, Nva, Val, Nle, Leu, Ile, Pgl, Cys(Me), Cys(Me) (O), Cys(Me) (O_2), Cys(Et), Cys(Et) (O), Cys (Et) (O_2), Met, Met(O), Met(O_2), Eth, Eth(O), Eth(O_2), Ser(Me), Ser(Et), Hse(Me), and Hse(Et) as well as any of such residues substituted at the amino nitrogen by a C_1–C_3 primary alkyl; subject to the proviso that, when R_1 is other than hydrogen, B is the residue of an amino acid that lacks substitution at the amino nitrogen.

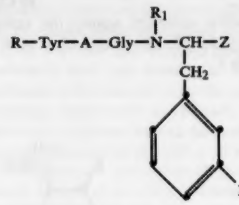
4,322,340

PHARMACOLOGICALLY ACTIVE PEPTIDES

Robert T. Shuman, Greenwood, and Paul D. Gesellchen, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 20, 1980, Ser. No. 198,900
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 E **39 Claims**

1. A compound of the formula



and pharmaceutically acceptable non-toxic acid addition salts thereof, in which

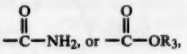
R is hydrogen, methyl, ethyl, cyclopropylmethyl, or allyl;

A is a residue of a D-amino acid selected from the group consisting of Ala, Abu, Nva, Val, Nle, Leu, Ile, Gly(Al), Gly(Cp), Met, Cys(Me), Met(O), Cys(Me) (O), Ser, Thr, and Hse;

R_1 is C_1–C_3 primary alkyl, cyclopropylmethyl, allyl, ethylthiomethyl, 2-fluoroethyl, or propargyl;

X is bromo, iodo, chloro, methyl, trifluoromethyl, or methoxy; and

Z is $-CH_2OR_2$,



in which R_2 is hydrogen, acetyl, or acetoxymethyl and R_3 is C_1–C_3 alkyl.

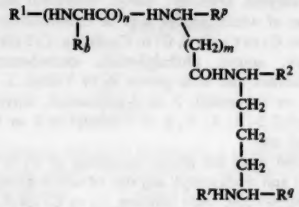
4,322,341

PEPTIDE, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

Yoshihiko Kitaura, Sakurai; Osamu Nakaguchi, Toyonaka; Keiji Hemmi; Matsuhiko Aratani, both of Suita; Hidekazu Takeno, Tenri; Satoshi Okada, Takatsuki; Hirokazu Tanaka; Masashi Hashimoto, both of Takarazuka; Yoshio Kuroda, Takatsuki; Eiko Iguchi, Osaka; Masanobu Kohsaka, Sakai; Hatsuo Aoki, Ikeda, and Hiroshi Imanaka, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Company, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 149,441, May 13, 1980, abandoned, which is a continuation-in-part of Ser. No. 147,710, May 8, 1980, abandoned, which is a continuation-in-part of Ser. No. 110,020, Jan. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 93,523, Nov. 13, 1979. This application Oct. 27, 1980, Ser. No. 201,241
Int. Cl.³ C07C *103/52*; C07G *7/00*
U.S. Cl. 260—112.5 R **17 Claims**

1. A compound of the formula:



wherein

R^1 is hydrogen or acyl;

R_b^1 is hydrogen, methyl, isopropyl, hydroxymethyl, protected hydroxymethyl or benzyl;

R^2 and R^q are each hydrogen, carboxy, protected carboxy, or a group of the formula:

wherein R_a^2 is mono- or di-carboxy or protected carboxy lower alkyl or ar(carboxy or protected carboxy)lower alkyl whose aryl moiety may be substituted by hydroxy,

R_b^2 is hydrogen or lower alkyl;

R^p is hydrogen, carboxy, protected carboxy, with proviso that when one of R^2 and R^q is hydrogen, then the other is carboxy or protected carboxy or a group of the formula:

wherein R_a^2 and R_b^2 are each as defined above;

R^r is hydrogen or amino protective group;

m is an integer 1 to 3; and

n is an integer 2,

or its pharmaceutically acceptable salt.

4,322,342

ANALGESIC COMPOUNDS

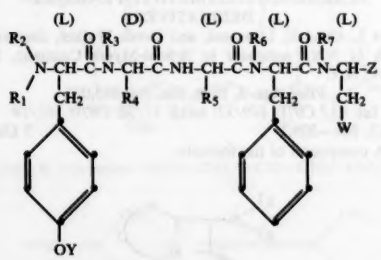
Edward L. Smithwick, Jr.; Robert C. A. Frederickson, both of Indianapolis, and Robert T. Shuman, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 807,849, Jun. 20, 1977, Pat. No. 4,259,234, which is a continuation-in-part of Ser. No. 726,724, Sep. 27, 1976, abandoned. This application Oct. 31, 1980, Ser. No. 202,513

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 E **67 Claims**

1. A compound of the formula



and pharmaceutically acceptable non-toxic acid addition salts thereof, in which:

L and D, when applicable, define the chirality;

R_1 is hydrogen, C_1–C_3 primary alkyl, or allyl;

R_2 is hydrogen or C_1–C_3 primary alkyl, subject to the limitation that when R_1 is allyl, R_2 is hydrogen;

R_3 is hydrogen or C_1–C_3 primary alkyl;

R_4 is C_1–C_4 primary or secondary alkyl;

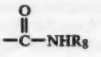
R_5 is hydrogen or C_1–C_4 primary or secondary alkyl;

R_6 is hydrogen or C_1–C_3 primary alkyl;

R_7 is C_1–C_3 primary alkyl;

Y is hydrogen or acetyl;

Z is



in which R_8 is C_1–C_3 alkyl or hydrogen; and W is isopropyl, —VR_9, or —CH_2—X—CH_3, in which V is O or S, R_9 is C_1–C_4 alkyl or aralkyl, and X is O, S, or —CH_2—.

4,322,343

PSEUDO-AGLYCONE OF ACTAPLANIN

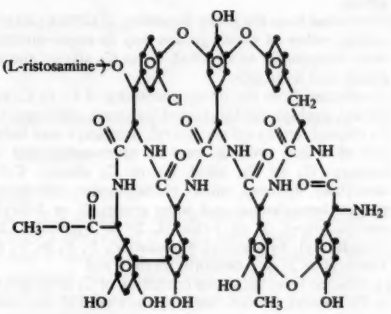
Manuel Debono, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 18, 1980, Ser. No. 217,961

Int. Cl.³ C07C *103/52*; A61K *35/00*

U.S. Cl. 260—112.5 R **4 Claims**

1. Antibiotic A-4696 pseudo-aglycone of the formula



or a pharmaceutically effective inorganic acid addition salt thereof.

4,322,344

PREPARATION OF CHEMICALLY PHOSPHORYLATED SOY PROTEINS AND THE PRODUCTS THEREFROM

Hsien-Jer Chen; Tin-Yin Liu; Hsien-Yi Sung, and Jong-Ching Su, all of P.O. Box 246, Hsin-chu, Taiwan

Filed Mar. 4, 1981, Ser. No. 240,378

Int. Cl.³ A23J *1/14*

U.S. Cl. 260—123.5 **5 Claims**

1. A process for the preparation of chemically modified soy proteins which comprises:

(a) isoelectrically aqueous washing the defatted soy flour,

(b) extracting the proteins from defatted soy flour in aqueous medium of pH either 2.0–2.5 or 11.0–12.0,

(c) adding the powdered sodium trimetaphosphate to the protein extract and readjusting the pH value to 11.0–12.0 in a short time by the addition of 40% NaOH and keeping at 15°–50° C. for 1–4 hours, and

(d) recovering the phosphorylated soy proteins from reaction solution by isoelectric precipitation and spray drying.

4,322,345
2-AZETIDINONE 4-CARBOXY DERIVATIVES AND A PROCESS FOR PRODUCING THE SAME

Tadashi Hirata, Yokohama; Akira Sato, and Nobuhiro Nakamizo, both of Machida, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 947,223, Sep. 29, 1978, abandoned. This application Apr. 21, 1980, Ser. No. 142,542

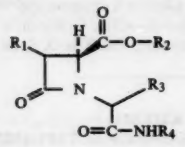
Claims priority, application Japan, Sep. 30, 1977, 52/118120; Feb. 23, 1978, 53/20010; Mar. 3, 1978, 53/24150; Sep. 2, 1978, 53/13791

Int. Cl.[3] **C07D** *205/08, 31/395, 403/06*

U.S. Cl. 260—239 A **22 Claims**

1. A 2-azetidinone derivative selected from the group consisting of compounds of formulae (Ia) and (I'a) as follows, and their pharmaceutically acceptable salts:

formula (Ia)



wherein:

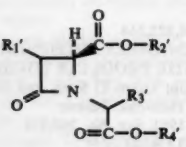
R_1 is selected from the group consisting of aralkoxy, $C_1$5 alkanoyloxy, methanesulphonyloxy and p-toluenesulphonyloxy, any one of which groups may be mono-substituted with halogen, C_1 to C_5 alkyl, C_1 to C_5 alkoxy and nitro group; hydrogen, hydroxy, and C_1 to C_5 alkoxy group;

R_2 is selected from the group consisting of C_1 to C_5 alkyl and aralkyl, either of which groups may be mono-substituted with halogen, C_1 to C_5 alkyl, C_1 to C_5 alkoxy and nitro group; and hydrogen;

R_3 is selected from the group consisting of C_1 to C_5 alkyl, phenyl, naphtyl, aralkyl, C_2 to C_5 alkynyl, aralkynyl, C_2 to C_5 alkynyl, aralkynyl and acetyl, propionyl, and butyryl, and of which groupds may be mono-substituted with halogen, C_1 to C_5, alkyl, C_1 to C_5 alkoxy, $C_1$5 alkanoyloxy, hydroxy, amino, phthalylimino, carbobenzoxyamino benzylamino and nitro group; 2- or 3-furyl, 5-methyl-2-furyl, 2- or 3-thienyl, 2- or 3-pyrrolyl, 2- or 4-imidazolyl, 3-pyrazolyl, 4-isoxazolyl, 2-, 3-, 4-, 5-, 6- or 7-indolyl or 2- or 3-benzo(b) furanyl; and

R_4 is selected from the group consisting of C_1 to C_5 alkyl, C_2 to C_5 alkenyl, phenyl, naphthyl and aralkyl, any one of which groups may be mono-substituted with halogen, C_1 to C_5 alkyl, C_1 to C_5 alkoxy, $C_1$5 alkanoyloxy, hydroxy, amino, phthalylimino, carbobenzoxyamino, benzylamino, and nitro group,

formula (I'a)



wherein:

R'_1 is selected from the group consisting of aralkoxy, $C_1$5 alkanoyloxy, methanesulphonyloxy and p-toluene-sulphonyloxy, any one of which groups may be mono-substituted with halogen, C_1 to C_5 alkyl, C_1 to C_5 alkoxy, and nitro; hydrogen, hydroxy, and C_1 to C_5 alkoxy group;

R'_2 is selected from the group consisting of C_1 to C_5 alkyl, aralkyl and t-butyl dimethylsilyl and trimethylsilyl, and one of which groups may be mono-substituted with halogen, C_1 to C_5 alkyl, C_1 to C_5 alkoxy and nitro group; and hydrogen;

R'_3 is selected from the group consisting of C_1 to C_5 alkyl, phenyl, naphthyl, aralkyl, C_2 to C_5 alkenyl, aralkynyl, C_2 to C_5 alkynyl, aralkenyl, acetyl, propionyl and butyryl, any one of which groups may be mono-substituted with halogen, C_1 to C_5 alkyl, C_1 to C_5 alkoxy, $C_1$5 alkanoyloxy, hydroxy, amino, phthalylimino, carbobenzoxyamino, benzylamino, and nitro group, 2- or 3-furyl, 2- or 3-thienyl, 2- or 3-pyrrolyl, 2- or 4-imidazolyl, 3-pyrazolyl, 4-isoxazolyl, 2-, 3-, 4-, 5-, 6- or 7-indolyl or 2- or 3-benzo(b-)furanyl; and

R'_4 selected from the group consisting of C_1 to C_5 alkyl, arallkyl and trialkylsilyl, any one of which groups may be mono-substituted with halogen, C_1 to C_5 alkyl, C_1 to C_5 alkoxy and nitro group, and hydrogen.

4,322,346
5H-2,3-BENZODIAZEPINE DERIVATIVES

Jeno Korosi, 27, Attila ut; Tibor Lang, 11, Fenyöu., both of Budapest I; Jozsef Szekely, 43, Rudas L. u., Budapest VI; Ferenc Andrasi, 42, Szeruskert u., Budapest III; Gabor Zolyomi, 9a, Dolgozo u., Budapest SVIII; Jozsef Borsi, 90, Bartok Bela u.; Katalin Goldschmidt nee Horvath, 28, Alsohegy u., both of Budapest XI; Tamas Hamori, 34, Egri u., Maklar; Gabriella Szabo nee Czibula, 13d, Martos F. u., Budapest XIV; Zsuzsanna Meszaros nee Dunai-Kovacs, 66, Izabella u., Budapest VI, and Erzsebet Miglecz, 27, Attila u., Budapest I, all of Hungary

Continuation-in-part of Ser. No. 86,047, Oct. 18, 1979, abandoned. This application Sep. 26, 1980, Ser. No. 191,811

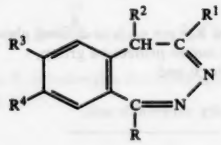
Claims priority, application Hungary, Oct. 19, 1978, GO 1426

Int. Cl.[3] **A61K** *31/55;* **C07D** *243/00, 407/04, 409/04*

U.S. Cl. 260—239 BD **3 Claims**

1. A compound of the formula

I



wherein

R is phenyl having a trifluoromethyl or a halogen substituent,

R^1 is methyl,

R^2 is hydrogen,

R^3 is methoxy and R^4 is methoxy, or a pharmaceutically acceptable acid addition salt thereof.

4,322,347
2-CARBAMOYLOXYMETHYL-PENICILLIN DERIVATIVES

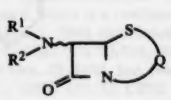
Robert L. Cundall, Liverpool, and Derek Walker, Jamesville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Apr. 3, 1978, Ser. No. 893,092

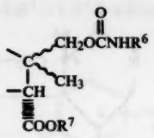
Int. Cl.[3] **C07D** *499/32;* **A61K** *31/38;* **C07D** *501/14*

U.S. Cl. 260—239.1 **7 Claims**

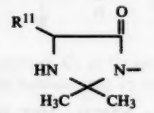
1. A compound of the formula



in which Q is



R^1 is hydrogen and R^2 is hydrogen, a conventional amino-protecting group, phenoxyacetyl, phenylacetyl, 2-amino-2-phenylacetyl, 2-amino-2-(p-hydroxyphenyl)acetyl, naphthoyl, 2-ethoxynaphthoyl, 5-methyl-3-phenyl-4-isoxazolylcarbonyl, 5-methyl-3-(o-chlorophenyl)-4-isoxazolylcarbonyl or 3-(2,6-dichlorophenyl)-5-methyl-4-isoxazolylcarbonyl, or R^1 and R^2, taken together with the nitrogen atom to which they are attached, form a phthalimido group, a succinimido group or a group of the formula



in which R^{11} is phenyl or p-hydroxyphenyl;

R^6 is hydrogen, (lower)alkanoyl, chloroacetyl, dichloroacetyl, trichloroacetyl or p-toluenesulfonyl; and

R^7 is hydrogen or a conventional carboxyl-protecting group; or, when R^7 is hydrogen, a nontoxic pharmaceutically acceptable salt or physiologically hydrolyzable ester thereof.

4,322,348

MAYTANSINOIDS

Mitsuko Asai, Osaka; Motowo Izawa, Hyogo, and Seiichi Tanida, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

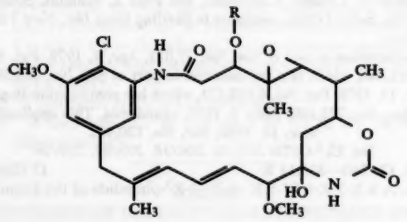
Filed May 14, 1980, Ser. No. 149,165

Claims priority, application Japan, Jun. 5, 1979, 54-70771

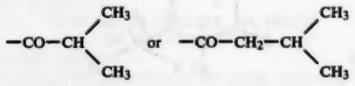
Int. Cl.³ C07D *498/18*

U.S. Cl. 260—239.3 P **5 Claims**

1. A compound of the formula:



wherein R represents —CO—CH_3, —CO—CH_2—CH_3,



4,322,349

PROCESS FOR PREPARING 6-METHYLENE STEROIDS

Klaus Annen; Henry Laurent; Helmut Hofmeister, and Rudolf Wiechert, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

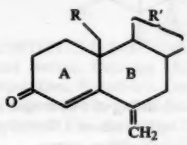
Continuation-in-part of Ser. No. 231,715, Feb. 5, 1981, abandoned. This application Feb. 17, 1981, Ser. No. 235,240

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1980, 3004508

Int. Cl.³ C07J *5/00*

U.S. Cl. 260—239.55 R **13 Claims**

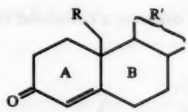
1. A process for preparing a 6-methylene-Δ^4-3-keto steroid of the formula



wherein

R is hydrogen, alkoxy of up to 6 carbon atoms or acyloxy of up to 6 carbon atoms wherein the acyl group is that of a carboxylic acid, and

R′ is the CD-ring system of a steroid of the androstane or pregnane series, comprising reacting the corresponding Δ^4-3-keto steroid of the formula



with a formaldehyde derivative of the formula

$X(CH_2O)_nY$

wherein

n is 1, 3 or an integer on the order of 100–1000, and

X is C_{1-5} alkoxy and Y is C_{1-5} alkyl when n is 1,

X and Y represent a single bond between the terminal C atom and the terminal O atom when n is 3, and

X is hydroxy and Y is hydrogen when n is an integer on the order of 100–1000,

in an inert solvent, in the presence of a strong, acidic condensation agent.

4,322,350

PROCESS FOR THE SYNTHESIS OF LEUROSINE AND OF ITS DERIVATIVES

Nicole Langlois; Yves Langlois, both of Bures, and Pierre Potier, Bois-D'ardy, all of France, assignors to Agence Nationale de Valorisation de la Recherche, Paris, France

Filed Apr. 11, 1978, Ser. No. 895,379

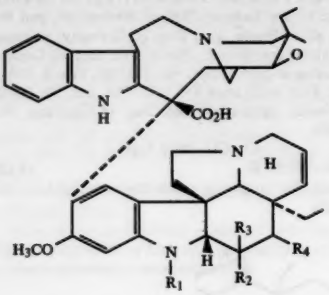
Claims priority, application France, Apr. 13, 1977, 77 11081

Int. Cl.³ C07D *519/04*

U.S. Cl. 260—244.4 **11 Claims**

1. A process for the preparation of a compound of formula (V) and salts thereof

(V)



wherein

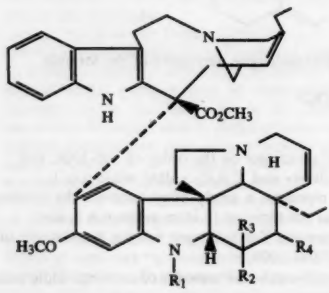
R_1 is selected from the group consisting of a hydrogen atom, an alkyl group having 1 to 3 carbon atoms, a formyl group and an acyl group having 1 to 3 carbon atoms;

R_2 is selected from the group consisting of an alkoxycarbonyl group, a hydrazide group, an acetamido group, a hydroxymethyl group, and an alkanoyloxy methyl group, and wherein the alkoxy and alkanoyl groups have 1 to 3 carbon atoms; and

R_3 and R_4 are the same or different and each is selected from the group consisting of a hydrogen atom, a hydroxyl group and an alkanoyloxyl group having 1 to 3 carbon atoms;

which comprises the step of oxidizing a compound of formula IV

(IV)



wherein R_1, R_2, R_3 and R_4 are as previously defined with at least one oxidizing agent selected from the group consisting of lead tetraacetate, thallium triacetate, air, and oxygen.

4,322,351

ANTINEOPLASTIC 4'-FORMYLAMINO AND 4'-ACETYLAMINO VLB, AND DERIVATIVES THEREOF

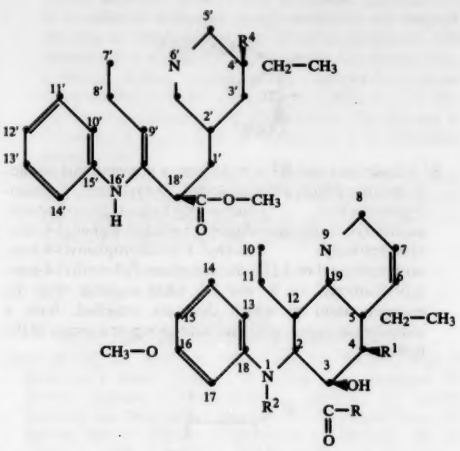
Jean C. Miller, and Koert Gerzon, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 25, 1980, Ser. No. 180,789

Int. Cl.³ A61K *31/475*; C07D *519/04*

U.S. Cl. 424—262 **7 Claims**

1. A compound of the formula



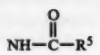
wherein

R is OCH_3, NH_2, $NHCH_3$, NHC_2H_5, NHC_2H_4OH or NH—NH_2,

R^1 is OH or acetoxy,

R^2 is CH_3 or CHO and

R^4 is



wherein R^5 is H, methyl, NHCOO methyl or methylthiomethyl,

and pharmaceutically acceptable acid addition salts thereof formed with non-toxic acids.

6. A pharmaceutical formulation in unit dosage form comprising per unit dose an antineoplastic amount of a compound according to claim 1 plus one or more pharmaceutical diluents.

7. A method of treating neoplasms which comprise administering to a mammal having a neoplasm susceptible to the action of a drug according to claim 1 and in need of treatment, an antineoplastically effective amount of a drug according to claim 1.

4,322,352

INDOLYL PHTHALIDE COMPOUNDS

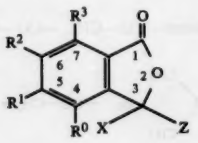
Nathan N. Crounse, Cincinnati, and Paul J. Schmidt, Sharonville, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 27,031, Apr. 4, 1979, Pat. No. 4,251,446, which is a continuation-in-part of Ser. No. 868,583, Jan. 11, 1978, Pat. No. 4,189,171, which is a continuation-in-part of Ser. No. 773,180, Mar. 1, 1977, abandoned. This application Mar. 14, 1980, Ser. No. 130,422

Int. Cl.³ C07D *209/20, 209/18, 209/82, 209/04*

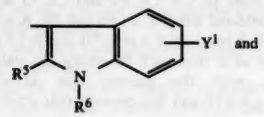
U.S. Cl. 260—326.14 R **17 Claims**

1. A 3-X-3-Z-4-R°-5-R^1-6-R^2-7-R^3-phthalide of the formula



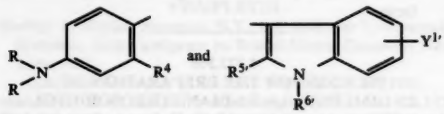
wherein:

X represents 1-R^6-2-R^5-5/6-Y^1-3-indolyl having the formula



and

Z represents 2-R^4-4-$N(R)_2$-phenyl or 1-$R^{6'}$-2-$R^{5'}$-5/6-$Y^{1'}$-3-indolyl having the respective formulas



in which

R represents non-tertiary C_1 to C_4 alkyl, benzyl or benzyl substituted in the benzene ring by one or two of halo or C_1 to C_3 alkyl,

R^4 represents hydrogen, C_1 to C_3 alkyl, C_1 to C_4 alkoxy, halo, acetamido, dialkylamino in which alkyl is non-tertiary C_1 to C_4 alkyl, C_2 to C_5 or acyloxy.

R^5 and $R^{5'}$ represent hydrogen, C_1 to C_3 alkyl or phenyl,

R^6 and $R^{6'}$ represent hydrogen, C_1 to C_{18} alkyl, C_2 to C_4 alkenyl, benzyl or benzyl substituted in the benzene ring by one or two of halo or C_1 to C_3 alkyl, and

Y^1 and $Y^{1'}$ represent one or two of hydrogen, C_1 to C_3 alkyl, C_1 to C_3 alkoxy, halo or nitro; and

R', R^3 and one of R^1 and R^2 represent hydrogen and the other of

R^1 and R^2 represents

in which B represents —OY or

wherein

Y is hydrogen, an alkali metal cation, an ammonium cation, a C_1 to C_{18} mono-, di- or trialkylammonium cation, C_1 to C_{18} alkyl, C_2 to C_{18} alkenyl, benzyl or benzyl substituted in the benzene ring thereof by C_1 to C_{12} alkyl, halo or C_1 to C_8 alkoxy,

Y' is hydrogen or C_1 to C_{18} alkyl, and

Y'' is hydrogen, C_1 to C_{18} alkyl or C_4 to C_{12} N,N-dialkylaminoalkyl.

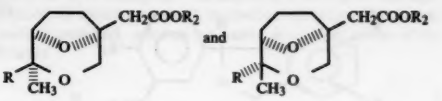
4,322,353

SYNTHESIS OF DIOXABICYCLO(3.2.1)OCTANES AND OXEPANES

Zoltan G. Hajos, Princeton, and Michael P. Wachter, Bloomsbury, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Apr. 18, 1980, Ser. No. 141,524
Int. Cl.³ C07D *319/10*
U.S. Cl. 260—340.6 **6 Claims**

1. A compound selected from the group consisting of compounds of the formula:



and

wherein R is an alkyl group selected from methyl, ethyl, propyl, isopropyl, butyl, isobutyl, pentyl, and hexyl and R_2 is hydrogen or lower alkyl having 1–6 carbon atoms and the pharmaceutically acceptable acid addition salts thereof.

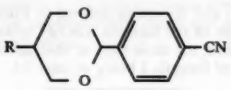
4,322,354

5-SUBSTITUTED-2-(4-CYANOPHENYL)-1,3,-DIOXANES

Howard Sorkin, Berkeley Heights, N.J., assignor to Timex Corporation, Waterbury, Conn.

Continuation-in-part of Ser. No. 17,635, Mar. 5, 1979, abandoned. This application Apr. 3, 1980, Ser. No. 136,855
Int. Cl.³ C07D *319/04*
U.S. Cl. 260—340.7 **3 Claims**

1. A compound of the formula:



wherein R is alkyl.

4,322,355

PRODUCTION OF 1,3-DIFUNCTIONAL COMPOUNDS

David Horvitz, and William D. Baugh, both of Cincinnati, Ohio, assignors to National Distillers & Chemical Corp., New York, N.Y.

Filed Apr. 15, 1980, Ser. No. 140,511
Int. Cl.³ C07D *319/04*; C07C *69/16, 19/045*
U.S. Cl. 260—340.7 **7 Claims**

1. In a process for preparing a compound or a mixture of compounds selected from the group consisting of 1,3-dioxane, 1,3-diacetoxypropane, 3-hydroxypropyl acetate, 3-hydroxypropyl iodide, 3-iodopropyl acetate, 1,3-diiodopropane, 1,3-propanediol, 4,4-dimethyl-1,3-dioxane, 5,5-dimethyl-1,3-dioxane, 3-hydroxypropyl bromide, 3-bromopropyl acetate, 1,3-dibromopropane, 1-iodo-2-acetoxyethane or 1-iodo-3-acetoxypropane, by the reaction of an olefin with an aldehyde and/or a compound which, under the reaction conditions, provides an aldehyde, in the liquid phase in the presence of a strong acid catalyst, the improvement which comprises carrying out said reaction in the presence of a co-catalyst selected from the group consisting of bismuth oxide, antimony oxide, mixed oxides of antimony and bismuth, and the fluorides, chlorides, bromides, and iodides of antimony and bismuth.

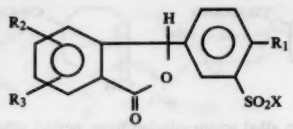
4,322,356

METHOD OF PREPARING SUBSTITUTED PHTHALIDES

Thomas J. Giacobbe, Concord, and Halbert C. White, Clayton, both of Calif., assignors to The Dow Chemical Co., Midland, Mich.

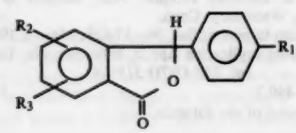
Division of Ser. No. 59,721, Jul. 23, 1979, abandoned, which is a division of Ser. No. 949,479, Oct. 10, 1978, Pat. No. 4,188,330. This application Mar. 24, 1980, Ser. No. 133,055
Int. Cl.³ C07D *307/88*
U.S. Cl. 260—343.3 R **6 Claims**

1. A method of preparing a compound of the formula:



(II)

whrein R_1 represents chloro, bromo, NR'R", lower alkyl or lower alkoxy radicals, R_2 and R_3 each independently represent hydrogen, chloro, bromo, nitro or lower alkyl radicals, X represents chloro or bromo and R' and R" each independently represent hydrogen, lower alkyl, lower alkenyl or lower hydroxyalkyl radicals, which comprises treating a reactant of the formula:



(I)

wherein R_1, R_2 and R_3 are as defined in Formula II, with a sulfonating agent of the formula XSO_3H wherein X is as defined hereinbefore, the mole ratio of said sulfonating agent to the compound of formula I being at least 5:1.

4,322,357

NOVEL CYCLOHEPTANES

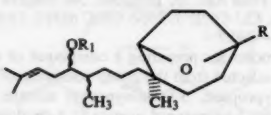
Ramesh M. Kanojia, Somerville, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Feb. 23, 1981, Ser. No. 237,321

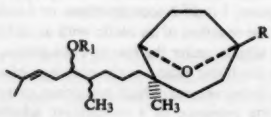
Int. Cl.³ C07D *309/06*

U.S. Cl. 260—345.8 R **4 Claims**

1. A compound selected from



and



wherein R is methoxy, hydroxy, and CH_2COOR_2 wherein R_2 is hydrogen or lower alkyl having 1–6 carbon atoms, and R_1 is lower alkanoyl having 2–5 carbon atoms or hydrogen.

4,322,358

PREPARATION OF FURAN

Tom A. Bither, Jr., Wilmington, Del., and William R. McClellan, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 17, 1979, Ser. No. 85,494

Int. Cl.³ C07D *307/36*

U.S. Cl. 260—346.11 **12 Claims**

1. Catalytic vapor phase process wherein the feed stream comprising, on a molar basis, the sum of which is 100%, 10–32% of at least one linear unsaturated C_4-hydrocarbon selected from 1-butene, 2-butene and 1,3-butadiene, 10–25% oxygen, 3–30% water and 13–77% inert diluent, is contacted with a modified bismuth molybdenum oxide catalyst at 350°–600° C. at a pressure of at least 1 atmosphere (about 100 kPa) for 0.1–10 seconds, said catalyst being selected from:

(a) $BiMo_aM_bQ_cR_dO_x$ wherein M is at least one element selected from In, Ce, Cr, Fe and Cu, Q is at least one element selected from V, P, Sb and Te, R is Na or Ag, a is 0.7–60.0, b is 0.1–39.8, c is 0–7.0, d is 0–1.5 and x is such a number as is necessary to satisfy the valences of the elements, with the proviso that $a/1+b \geqq 0.5$ and $a/1+b+c \geqq 0.19$ and the proviso that $c>0$ when $d>0$; and

(b) $BiMo_aAs_bZ_cO_x$ wherein Z is at least one element selected from Na and Ca, a is 1.3–2.0, b is 0.1–0.3, c is 0.3–0.7 and x is such a number as is necessary to satisfy the valences of the elements, to produce an off-gas containing at least 1% furan.

4,322,359

PROCESS FOR THE PREPARATION OF 2,5-DIMETHYL-1,4: 3,6-DIANHYDROSORBITOL

Ray L. Hilliard, Annandale, and Irwin D. Greene, Somerset, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 19, 1981, Ser. No. 245,556

Int. Cl.³ C07D *493/04*

U.S. Cl. 260—347.8 **10 Claims**

1. A process for the preparation of 2,5-dimethyl-1,4:3,6-dianhydrosorbitol from 1,4:3,6-dianhydrosorbitol by methylation with dimethyl sulfate, which comprises adding a stoichiometric excess of dimethyl sulfate to a solution of an alkali metal base and 1,4:3,6-dianhydrosorbitol in a water-miscible, non-hydroxylic organic solvent at a temperature of from about 25° C. to the boiling point of the solvent and recovering the resultant 2,5-dimethyl 1,4:3,6-dianhydrosorbitol.

4,322,360

PROCESS FOR PRODUCING IMIDAZOLIDONE INTERMEDIATES OF BIOTIN

Kraft Hohenlohe-Oehringen, Innsbruck, Austria, and Anton Fliri, Cambridge, Mass., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 135,796, Mar. 31, 1980, Pat. No. 4,284,788. This application Mar. 23, 1981, Ser. No. 246,839

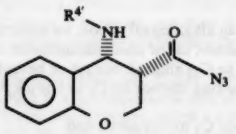
Claims priority, application Switzerland, Apr. 6, 1979, 3293/79

Int. Cl.³ C07C *117/02*

U.S. Cl. 260—349 **1 Claim**

1. A compound of the formula:

VIII



wherein $R^{4'}$ is azidosulphonyl.

4,322,361

METHOD OF PREPARING A MANGANESE CHELATE HAVING IMPROVED PROPERTIES

David A. Wilson, Richwood, and Freddie Griffin, Jr., Missouri City, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 3, 1980, Ser. No. 126,792

Int. Cl.³ C07F *13/00*

U.S. Cl. 260—429 J **4 Claims**

1. A process for making a freeze-thaw stable manganese chelate solution consisting essentially of

(1) mixing ethylenediaminetetraacetic acid and the sodium salt of N-hydroxyethylethylenediaminetriacetic acid in water in amounts so that the sodium salt of N-hydroxyethylethylenediaminetriacetic acid is from 20 to 48 mole percent of the total moles of chelate mixture,
(2) adding to said mixture a manganese compound while heating said solution,
(3) stirring until said manganese compound is dissolved,
(4) cooling said solution,
(5) adjusting the pH of said solution to about 7,
(6) adding water to said solution to obtain the desired manganese concentration.

4,322,362

SALTS OF 2-HYDROXYMALONATE PLATINUM COMPLEXES

Murray A. Kaplan, Syracuse, N.Y., and Alphonse P. Granatek, Scotsdale, Ariz., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 172,805, Jul. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 153,117, May 27, 1980, abandoned. This application Jan. 22, 1981, Ser. No. 227,324

Int. Cl.³ C07F *15/00*

U.S. Cl. 260—429 R **30 Claims**

1. The ammonium salt of 2-hydroxymalonato diammine platinum (II).

4,322,363

METHOD FOR MAKING DIBUTYLTIN DIFLUORIDE

William E. Wagner, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 28, 1980, Ser. No. 172,906

Int. Cl.³ C07F *7/22*

U.S. Cl. 260—429.7 **5 Claims**

1. A method for making dialkyltin difluoride which comprises reacting the corresponding dialkyltin diacetate in liquid form and substantially stoichiometric proportion with hydrogen fluoride.

4,322,364

MODIFIED ISOCYANATE COMPOSITIONS

Jeffrey Hughes, Manchester, England, and Gerard J. Murray, Dingley, Australia, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 2, 1981, Ser. No. 222,143

Claims priority, application United Kingdom, Jan. 2, 1980, 00012/80

Int. Cl.³ C07C *119/048, 119/055*

U.S. Cl. 260—453 AM **6 Claims**

1. A process for the production of a modified isocyanate which comprises reacting a composition containing carbodiimide groups and free isocyanate groups with from 0.1 to 2.0 moles per gram equivalent of carbodiimide functionality of a diester of an aliphatic dicarboxylic acid and from 0.3 to 1.5 gram equivalents of oxalic or formic acid per mole of diester.

4,322,365

PREPARATION OF ISOCYANATES

Franz Merger, Frankenthal, and Friedrich Towae, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 19, 1981, Ser. No. 265,156

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021299

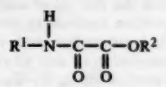
Int. Cl.³ C07C *118/00*

U.S. Cl. 260—453 P **7 Claims**

1. A process for the preparation of an isocyanate of the formula

$$R^1—M=C=O \qquad I$$

where R^1 is an aliphatic, cycloaliphatic, araliphatic, aliphatic-aromatic or aromatic radical, by thermal cleavage of a carboxamido compound, wherein an oxalic acid ester amide of the formula



II

where R^1 has the above meanings and R^2 is an aliphatic, cycloaliphatic, araliphatic, aliphatic-aromatic or aromatic radical, is cleaved thermally at not less than 300° C.

4,322,366

WASTE TREATMENT PROCESS

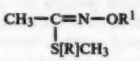
Frank R. Haglid, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 24, 1980, Ser. No. 143,485

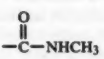
Int. Cl.³ C07C *119/18*

U.S. Cl. 260—453.3 **7 Claims**

1. A waste treatment process for reducing the level of odorous or toxic compounds without accumulating other toxic or explosive compounds in the treated waste stream comprising: (a) contacting an aqueous waste from the production of a compound of the formula:



wherein R^1 is H, or



with Cl_2 under acidic conditions at an oxidation-reduction potential in the range of about 500–1200 millivolts as measured between a platinum electrode and a silver electrode at a temperature of at least about 70° C. for a time sufficient to complete oxidation; and (b) contacting the resulting reaction mass with a basic compound selected from NaOH, KOH, and $Ca(OH)_2$ at a pH greater than about 9.5 and at a temperature of at least about 70° C.

4,322,367

DEOILING OF AQUEOUS SOLUTIONS OF SODIUM LAURYL SULFATE

Salvatore J. Silvis, Staten Island, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 26, 1979, Ser. No. 97,520

Int. Cl.³ C07C *141/04*

U.S. Cl. 260—459 R **17 Claims**

1. A method for deoiling a water-soluble salt of a C_{10}–C_{18} alkyl sulfate detergent in an aqueous medium containing oil therein which comprises the steps of admixing an aqueous detergent containing 25% to 33% by weight of said sulfate detergent and 1% to 6% of oil to be removed with a mixture of C_1–C_3 aliphatic alcohol, C_4–C_9 hydrocarbon and water to form a single-phase liquid containing said detergent, said oil, water, C_1–C_3 aliphatic alcohol and C_4–C_9 hydrocarbon in which the weight ratio of aliphatic alcohol to said detergent is within the range of 1.3:1 to 2.5:1 by weight; contacting said single-phase liquid detergent solution from the preceding step with an extractant solution containing liquid C_1–C_3 aliphatic alcohol and a liquid C_4–C_9 hydrocarbon, said extractant solution being in substantial equilibrium with said liquid detergent solution except for the oil content thereof so as to extract oil from said single-phase detergent liquid without significantly

altering the balance of the composition of said detergent solution; separating such liquids into two portions substantially corresponding to those before contacting is effected, with C_4–C_9 hydrocarbon, C_1–C_3 alcohol and free oil in the first portion and alkyl sulfate, C_1–C_3 alcohol, water and C_4–C_9 hydrocarbon in the second portion; separating the C_4–C_9 hydrocarbon and C_1–C_3 alcohol from the free oil of said first portion; evaporating said second portion material to remove portions of C_1–C_3 alcohol, C_4–C_9 hydrocarbon and water therefrom and to increase the concentration of said alkyl sulfate salt in the aqueous solution thereof; stripping C_1–C_3 alcohol from the concentrated alkyl sulfate solution resulting; returning the C_4–C_9 hydrocarbon and C_1–C_3 alcohol after removal of free oil therefrom back to the extraction step; adding the C_1–C_3 alcohol, C_4–C_9 hydrocarbon and water mixture removed from the extracted detergent solution back to said aqueous detergent solution prior to extraction thereof; and recycling the C_1–C_3 alcohol stripped off the detergent solution to another step of this method.

4,322,368

COPPER-PROMOTED ANTIMONY PHOSPHATE OXIDE COMPLEX CATALYSTS

Andrew T. Guttmann, Maple Heights, and Robert K. Grasselli, Chagrin Falls, both of Ohio, assignors to The Standard Oil Co., Cleveland, Ohio

Filed Dec. 28, 1979, Ser. No. 107,941
Int. Cl.³ C07C *120/14, 120/00, 121/32*
U.S. Cl. 260—465.3 **12 Claims**

1. In an ammoxidation process for producing a nitrile in which a reactant selected from the group consisting of propylene, isobutylene, t-butyl alcohol, acrolein and methacrolein together with oxygen and ammonia in the vapor phase are contacted with an oxide complex catalyst at elevated temperature, the improvement wherein said catalyst is an antimony phosphate having an Sb/P ratio of 0.7/1 to 1/0.7, a majority of said catalyst having the $SbPO_4$ layered structure, at least 70% of the antimony in said oxide complex catalyst being in the trivalent state, said oxide complex catalyst consisting essentially of the formula

$$Sb_mCu_nA_aC_eP_pD_dO_x$$

wherein

A is one or more elements selected from the alkali metals, alkaline earth metals and thallium;

C is one or more elements selected from the group consisting of Fe, Co, Ni, Mn, Cr, Bi, Zn, Cd and B;

D is one or more elements selected from the group consisting of As, Te, Ge, Sn, and Ti;

and wherein

m is 5–15;

n is 0.01–5

a is 0–2

e is 0–7.5

p is 5–15;

d is 0–1;

n+a+e+d=0.1 to 10 based on m+p=20; and

x is determined by the nature and the oxidation state of the other elements.

4,322,369

PREPARATION OF ALKYL CYANOACETATES

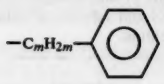
Michel Desbois, Rillieux, and Gerard Soula, Meyzieu, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Dec. 15, 1980, Ser. No. 216,363
Claims priority, application France, Dec. 20, 1979, 79 31221
Int. Cl.³ C07C *120/04*
U.S. Cl. 260—465.4 **21 Claims**

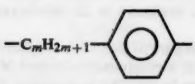
1. A process for the preparation of an alkyl cyanoacetate, comprising reacting an alkyl chloracetate having the formula Cl—CH_2—COOR, wherein R is lower alkyl, with an excess of an alkali metal cyanide, in an inert solvent and in the presence of at least one tertiary amine sequestering agent having the formula:

$$N\text{-}\{CHR_1\text{—}CHR_2\text{—}O\text{-}(CHR_3\text{—}CHR_4\text{—}O)_nR_5\}_3 \quad (I)$$

wherein $O \leqq n \leqq 10$, R_1, R_2, R_3 and R_4, which may be the same or different, are each hydrogen or lower alkyl, R_5 is alkyl or cycloalkyl having from 1 to 12 carbon atoms, phenyl,



or



with m ranging from about 1 to 12.

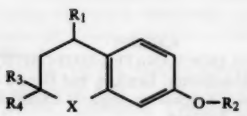
4,322,370

POLYCYCLIC COMPOUNDS

Derek V. Gardner, Bishop Stortford, England, assignor to Beecham Group Limited, England

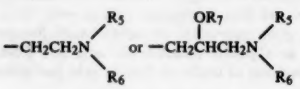
Continuation of Ser. No. 706,758, Jul. 19, 1976, abandoned. This application Feb. 13, 1978, Ser. No. 877,303
Claims priority, application United Kingdom, Jul. 24, 1975, 30923/75
Int. Cl.³ C07C *91/14, 93/06*
U.S. Cl. 260—501.18 **24 Claims**

1. A compound of the formula (II):



(II)

or a pharmaceutically acceptable salt thereof, wherein R_1 is phenyl or naphthyl or phenyl or naphthyl each substituted by one or two halogen atoms, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl, nitro, hydroxy, or trifluoromethylthio, R_2 is



wherein R_5 is hydrogen or alkyl of 1 to 6 carbon atoms, R_6 is hydrogen, or alkyl of 1 to 6 carbon atoms, and R_7 is hydrogen; R_3 and R_4 are each hydrogen or alkyl of 1 to 4 carbon atoms, and X is CO, CHOH, CHCl or

wherein R_8 and R_9 are each hydrogen, alkyl of 1 to 4 carbon atoms, $CR_{10}OH$ or CHR_{10} wherein R_{10} is alkyl of 1 to 4 carbon atoms.

4,322,371
PROCESS FOR THE MANUFACTURE OF 2-CHLOROETHANE-PHOSPHONIC ACID

Gerhard Stähler, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 701,184, Jun. 30, 1976, abandoned, which is a continuation of Ser. No. 207,619, Dec. 13, 1971, abandoned. This application Jan. 23, 1978, Ser. No. 871,550

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1970, 2061610; Sep. 29, 1971, 2148549

Int. Cl.³ C07F *9/38*

U.S. Cl. 260—502.4 R **6 Claims**

1. In a process for the manufacture of 2-chloroethanephosphonic acid by the hydrolytic cleavage of 2-chloroethanephosphonic acid bis(2-chloroethyl) ester, the improvement which comprises contacting said ester with 50 to 500 percent of concentrated, 30–38 percent, aqueous hydrochloric acid, by weight of said ester, at a temperature above 100° C. and under an elevated pressure, distilling off the 1,2-dichloroethane formed during the reaction, and maintaining an elevated pressure during the reaction by adding gaseous hydrogen chloride.

4,322,372
CONDENSATION PRODUCTS CONTAINING SULPHONIC ACID GROUPS

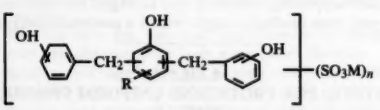
Albert Wurmli, Richen, and Hans U. Berendt, Allschwil, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 973,367, Aug. 28, 1978, abandoned, which is a continuation of Ser. No. 769,376, Feb. 16, 1977, abandoned, which is a continuation of Ser. No. 659,309, Feb. 19, 1976, abandoned, which is a continuation of Ser. No. 365,886, Jun. 1, 1973, abandoned. This application Jul. 11, 1980, Ser. No. 167,578

Int. Cl.³ C07C *143/42;* D06P *5/04*

U.S. Cl. 260—512 R **9 Claims**

1. A condensation product of the formula



wherein R represents alkyl, cycloalkyl, aralkyl, aryl or halogen, M represents hydrogen, an alkali metal or alkaline earth metal, or an ammonium group, and n is a number from 1 to 3.

4,322,373
PROCESS FOR THE PREPARATION OF AROMATIC DICARBOXYLIC ACID DICHLORIDES

Dieter Freitag, Krefeld, Fed. Rep. of Germany, and Manfred Schmidt, New Martinsville, W. Va., assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

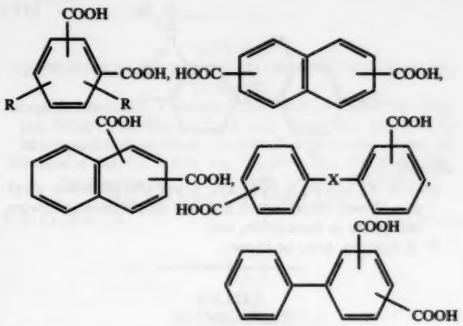
Filed Jun. 30, 1980, Ser. No. 164,342

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926789

Int. Cl.³ C07C *51/60*

U.S. Cl. 260—544 K **4 Claims**

1. A process for preparing an aromatic dicarboxylic acid dichloride which comprises reacting an aromatic dicarboxylic acid with phosgene in the presence of a catalytic amount of at least one phosphine imine or phosphoramidate, said aromatic dicarboxylic acid being selected from the group consisting of



and mixtures thereof wherein R is hydrogen, alkyl having 1 to 4 carbon atoms or halogen and —X— is a single bond, —O—, —S—, —CH_2—,

or cycloalkylene having 5 to 7 carbon atoms.

4,322,374
2,4,4,4-TETRAHALOBUTANOIC ACID HALIDE

Pierre Martin, Rheinfelden; Hans Greuter, Eiken; Eginhard Steiner, Fullinsdorf, and Daniel Bellus, Richen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

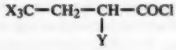
Division of Ser. No. 948,126, Oct. 3, 1978, Pat. No. 4,242,278, which is a continuation-in-part of Ser. No. 891,412, Mar. 29, 1978, abandoned. This application Aug. 25, 1980, Ser. No. 181,015

Claims priority, application Switzerland, Mar. 31, 1977, 4071/77; Nov. 24, 1977, 14404/77; Feb. 23, 1978, 1974/78; Sep., 1978, 9992/78

Int. Cl.³ C07C *53/50*

U.S. Cl. 260—544 Y **1 Claim**

1. A 2,4,4,4-tetrahalogenobutyric acid chloride of the formula:



in which X and Y are each chlorine or bromine.

4,322,375
2-SUBSTITUTED 5-PHENOXYPHENYLPHOSPHONIC ACID DERIVATIVES

Ludwig Maier, Arlesheim, and Dieter Dürr, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

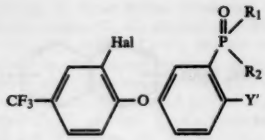
Filed Jan. 31, 1980, Ser. No. 117,167

Claims priority, application Switzerland, Feb. 6, 1979, 1147/79

Int. Cl.³ C07F *9/40, 9/22;* A01N *57/18*

U.S. Cl. 260—951 **7 Claims**

1. A 5-(2'-halogeno-4'-trifluoromethylphenoxy)-phenylphosphonic acid derivative of the formula



[(IV)]

wherein

each of R_1 and R_2 is hydroxyl, lower alkoxy, lower alkylthio, (lower alkyl) amino, di(lower alkyl) amino, chlorine, benzyloxy or benzylthio, and

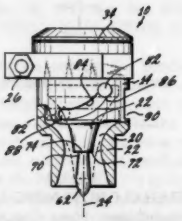
Y' is halogen, nitro or cyano.

4,322,376

CARBURETOR

Carl A. Hammons, 10873 Meadow Glen Way, and Joseph H. Martin, 10841 Meadow Glen Way, both of Escondido, Calif. 92026

Filed Oct. 20, 1980, Ser. No. 198,473
Int. Cl.³ F02M 9/12
U.S. Cl. 261—44 A **7 Claims**



3. The improvement in a carburetor, for an engine, of the type having a housing with an air passageway having a throat and a tapered plug mounted to move along the axis of said passageway into said throat between a first upstream position permitting more air flow and a second downstream position permitting less air flow, comprising:

(a) a control arm connected to said plug and extending generally laterally relative to said axis and said housing having a groove receiving said control arm and guiding its movement, said groove as viewed with said axis therebehind being sloped at its upstream end more parallel to said axis and being sloped at its downstream end less parallel to said axis whereby as said control arm is pivoted about said axis the plug is moved farther along said axis per degree of pivoting of said arm about said axis at said upstream end of said groove than at said downstream end of said groove so that rpm of said engine more nearly responds to the degrees of pivoting of said arm than if said groove had the form defined mathematically by the helix.

4,322,377

SURFACE AERATING ROTOR

Joseph R. Kaelin, Beckenriedstr. 58, CH-6374 Buochs, Switzerland

Continuation of Ser. No. 46,675, Jun. 8, 1979, abandoned. This application Dec. 4, 1980, Ser. No. 213,059
Claims priority, application Switzerland, Jun. 12, 1978, 6372/78
Int. Cl.³ B01F 3/04
U.S. Cl. 261—91 **12 Claims**

1. A surface aerating rotor having an intake zone for circulating and aerating a liquid,

comprising in combination:

a supporting assembly,

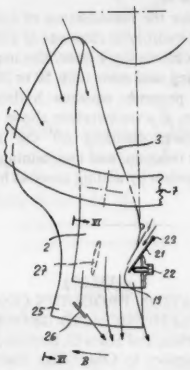
a driving shaft connected to said supporting assembly,

fixed flow guidance means disposed in the intake zone of said rotor,

a plurality of fluid throughput means, receiving a major portion of the fluid through said fixed flow guidance means, each fluid throughput means having a discharge opening and including a vane having an adjustable discharge angle, with respect to the radial direction, and at least one flow guide wall,

at least some of said fluid throughput means including

an extension member disposed downstream of said discharge opening,



flow guide means located on said extension member and extending substantially in the direction of flow of said liquid, and

a baffle downstream of said flow guide means, for redirecting the flow of the liquid in a predetermined direction, at least part of the flow of the liquid passing through said flow guide means being diverted therefrom to said baffle, and

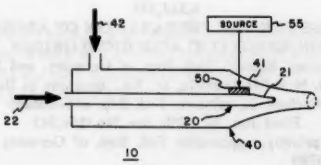
connecting means, joining said fluid throughput means to said supporting assembly, and arranged for adjustment of said vane discharge angle within a predetermined range.

4,322,378

METHOD FOR PRODUCING UNIFORM SPHERICAL SHELLS

Charles D. Hendricks, Livermore, Calif., assignor to University of Illinois Foundation, Urbana, Ill.

Continuation of Ser. No. 915,936, Jun. 15, 1978, abandoned. This application Feb. 8, 1980, Ser. No. 119,909
Int. Cl.³ B29C 23/00
U.S. Cl. 264—7 **14 Claims**



1. A method for producing spherical shells of hydrogen, comprising the steps of:

(a) providing a jet of hydrogen in liquid form;

(b) injecting a stream of gas into said jet of liquid hydrogen; and

(c) mechanically disturbing said gas stream at a periodic rate

to form uniform gas bubbles in the liquid jet, whereby said bubbles break up the liquid jet into spherical shells of liquid hydrogen.

4,322,379

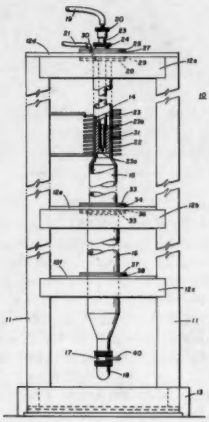
FABRICATION PROCESS FOR SEMICONDUCTOR BODIES

Jack S. Kilby, Dallas; William R. McKee, Plano, and Wilbur A. Porter, College Station, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 766,223, Feb. 7, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 26,289

Int. Cl.³ B01J *2/02*

U.S. Cl. 264—13 **11 Claims**



1. A method of forming tear-shaped semiconductor bodies of substantially uniform size with reduced grain boundaries therein, comprising:

(a) introducing solid particles of semiconductor material into a capillary tube at the upper end of an elongated first chamber;

(b) flowing inert gas into said first chamber to purge air therefrom and create an inert atmosphere therein;

(c) heating said capillary tube to melt said semiconductor material;

(d) forcing said molten semiconductor material through a nozzle in said capillary tube to form said melt into droplets at the upper end of said first chamber;

(e) allowing said droplets to free fall through said inert gas atmosphere to cool to solidification as tear-shaped bodies;

(f) collecting and introducing said tear-shaped bodies into a feed tube at the upper end of an elongated second chamber;

(g) flowing inert gas into said second chamber to purge air therefrom and create an inert atmosphere therein;

(h) heating an upper portion of said second chamber and said inert gas therein to form an upper zone having a temperature sufficient to melt said tear-shaped bodies passing therethrough;

(i) establishing in a lower zone of said second chamber a temperature of said inert gas therein to solidify said molten tear-shaped bodies passing from said upper zone and through said lower zone;

(j) releasing said solid tear-shaped bodies from said free tube to free fall through said second chamber upper zone to remelt said bodies at a predetermined rate, and then passing through said lower zone to resolidify said bodies at a slower rate to form tear-shaped semiconductor bodies having substantially uniform size and reduced grain boundaries therein; and

(k) collecting said solidified tear-shaped semiconductor bodies.

4,322,380

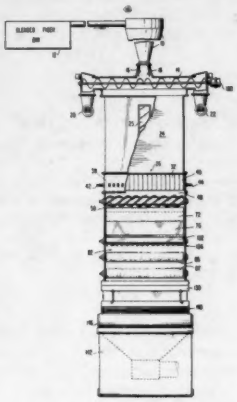
METHOD FOR FEEDING AND ORIENTING FIBROUS FURNISH

Joseph S. Bleymaier, Columbia, Md.; Wilfred Faraworth, Clinton, Wash., and Thomas E. Peters, Boise, Id., assignors to Morrison-Knudsen Forest Products Company, Inc., Boise, Id.

Division of Ser. No. 4,858, Jan. 19, 1979, Pat. No. 4,255,108. This application Oct. 15, 1980, Ser. No. 197,178

Int. Cl.³ B29J *5/00*; D04H *1/00*

U.S. Cl. 264—24 **14 Claims**



1. In continuous-line manufacture of fiberboard, a method providing for uninterrupted movement of lightweight comminuted furnish through a forming line without relying on pneumatic impulsion and uniformly distributing such furnish for electric field orientation and delivery over a preselected area to continuously form a mat of such fibrous furnish, comprising

providing a lightweight, comminuted, fibrous furnish including elongated, fine-textured fibers,

providing a forming line including means for feeding furnish into the forming line located in vertically spaced relationship from a conveyor means for deposition of furnish to form a mat, with the forward direction of movement for furnish in the forming line being from the means for feeding furnish into the forming line toward the conveyor means,

such conveyor means presenting a mat support web,

controllably moving such web to present a surface of preselected area for deposition of furnish, such web movement establishing a forming direction for the mat being formed by deposition of furnish,

such preselected area of deposition establishing a dimension in the forming direction and a dimension perpendicularly transverse to the forming direction,

continuously feeding such fibrous furnish into the forming line,

moving such furnish including an excess through a distributor disposed to move such furnish

transversely to the forward direction of movement of furnish to distribute such furnish substantially uniformly over one dimension of the preselected area of deposition while returning excess furnish for recycling,

delivering furnish in the forward direction,

passing the furnish distributed over such one dimension of the selected area of deposition through a flow-through header chamber so as to maintain a substantially uniform head of furnish in such header chamber,

confining such furnish to a fractional portion of the remaining dimension of the preselected area of deposition,

controllably metering removal of furnish from such header chamber in the forward direction by continuously removing furnish from such header chamber,

uniformly distributing such controllably metered furnish removed from such header chamber over the remaining dimension of the preselected area of deposition,

such distribution over the remaining dimension being substantially free of pneumatic impulsion,

delivering such furnish uniformly distributed over substantially the full selected area of deposition toward the support web along a flow path having a direction which is substantially normal to the surface of deposition, and

directing such furnish as uniformly distributed over the full area of deposition into an electric field orientation chamber means for orientation and deposition on the moving web.

4,322,381

METHOD OF MANUFACTURING HOLLOW FIBER

Yasushi Joh, Yokohama, Japan, assignor to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 916,964, Jun. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 754,973, Dec. 28, 1976, abandoned. This application Dec. 8, 1980, Ser. No. 213,874

Claims priority, application Japan, Dec. 29, 1975, 50-156316; Jul. 8, 1976, 51-81570

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—41 **6 Claims**

1. A method of manufacturing a hollow fiber which comprises providing a spinning solution of a water miscible organic solvent having a dipole moment less than 3×10^{-18} esu and a high molecular weight compound consisting of a cellulose ester, polymethylmethacrylate, poly vinyl chloride, or poly-γ-benzyl glutamate, extruding the solution through an annular slit, simultaneously extruding a neutral aqueous salt solution from an orifice encircled by said slit, said solution having a salt content of 15 to 50% by weight and being capable of developing a phase separation with said water misicible organic solvent by a salting out effect, said salt solution and said spinning solution developing said phase separation without mutual diffusion and significant coagulation, and passing the extruded spinning solution substantially downwardly into an aqueous coagulating bath to initiate coagulation, the annular slit being separated from said bath by at least 5 mm, and sufficient to cause significant evaporation of the solvent from said spinning solution.

4,322,382

METALLURGICAL MOUNT PREPARATION METHOD

Norman R. Villeneuve, 84 Newgate Rd., East Granby, Conn. 06026

Filed Jun. 23, 1980, Ser. No. 162,386

Int. Cl.³ B29C *6/02, 1/04*

U.S. Cl. 264—279 **6 Claims**

1. A method for preparing metallurgical mounts, said method comprising the steps of:

providing a block of polytetrafluoroethylene defining a supporting surface on which mounting molds may be placed in a molding operation,

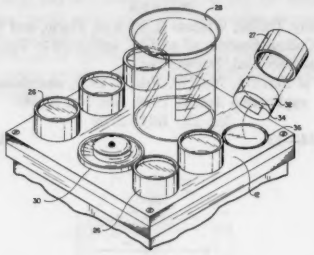
placing on said supporting surface an open-bottomed mounting mold having a bottom area considerably smaller than the area of said supporting surface,

heating said block of polytetrafluoroethylene to raise said supporting surface to an elevated temperature above ambient temperature,

placing a metallurgical specimen on said supporting surface within said mounting mold,

providing a mounting agent in the form of an uncured liquid mixture of resin and hardener,

pouring said uncured mounting agent into said mounting mold so as to fill at least a portion of said mold and to surround at least a portion of said specimen while also contacting said supporting surface of said block of polytetrafluoroethylene through said open bottom of said mold, and



heating said block of polytetrafluoroethylene to maintain substantially said elevated temperature of said supporting surface while said mounting agent is allowed to cure.

4,322,383

GAS COMPONENT DETECTION APPARATUS

Eturo Yasuda; Susumu Sato; Yoshihiro Segawa; Tadashi Hattori, all of Okazaki, and Keiji Aoki, Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

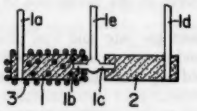
Division of Ser. No. 899,397, Apr. 24, 1978, Pat. No. 4,244,918, which is a continuation-in-part of Ser. No. 751,956, Dec. 17, 1976, Pat. No. 4,099,922. This application Aug. 18, 1980, Ser. No. 179,222

Claims priority, application Japan, Dec. 23, 1975, 50-154334; Apr. 25, 1977, 52-47702

The portion of the term of this patent subsequent to Jul. 11, 1995, has been disclaimed.

Int. Cl.³ G01N *27/12*

U.S. Cl. 422—95 **9 Claims**



1. A gas component detection apparatus comprising:

first and second gas sensing elements each including a metal oxide which exhibits variable electric resistance according to gaseous components and temperatures of gases to be detected, each element additionally carrying a catalyst for promoting oxidation reactions of the gaseous components of the gases,

a first pair of electrodes inserted into said first sensing element for sensing a variation in electric resistance exhibited at a portion of said first sensing element subjected to catalytic action of the catalyst carried thereon,

a second pair of electrodes inserted into said second sensing element for sensing a variation in electric resistance exhibited at a portion of said second sensing element at which the electric resistance sensed across the second pair of electrodes is not affected by the catalytic action of the catalyst carried thereon, and

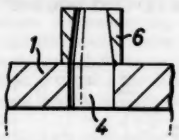
circuit means adapted to be joined to said pairs of electrodes for producing an output signal in a manner whereby the variations in resistance of the sensing elements resulting from gas temperatures offset one another and said output is representative of variations in resistance of the first sensing element resulting from the gaseous components.

4,322,384

SPARGER NOZZLES

Gordon W. Sutton, Bisley, England, assignor to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 890,961, Mar. 28, 1978, abandoned.
This application Feb. 12, 1980, Ser. No. 120,870
Claims priority, application United Kingdom, Apr. 1, 1977, 13832/77
Int. Cl.³ B01J 8/24; F27B 15/10
U.S. Cl. 422—144 8 Claims



1. In a catalytic cracker regenerator having a housing, a bottom portion, an inlet for receiving catalyst, an outlet for discharging catalyst and a sparger situated in said regenerator near said bottom, the improvement, which reduces the tendency of said sparger to erode during use, comprising:

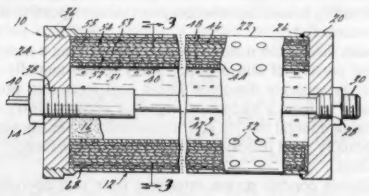
said sparger having a base portion and a plurality of converging nozzles positioned on said base portion, each of said converging nozzles projecting upwardly and having an inlet and outlet for the passage of fluid through said converging nozzles, each of said outlets being smaller in cross-sectional area than the respective inlet to said converging nozzles so that the passage of fluid through said nozzle converges.

4,322,385

FILTERS FOR VEHICLE OCCUPANT RESTRAINT SYSTEM FLUID SUPPLIES

George W. Goetz, Detroit, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 43,297, May 29, 1979, abandoned, which is a continuation of Ser. No. 782,691, Mar. 30, 1977, abandoned, and Ser. No. 658,131, Feb. 13, 1976, abandoned. This application Feb. 23, 1981, Ser. No. 237,333
Int. Cl.³ B01J 7/00; B60R 21/00; B01D 25/06
U.S. Cl. 422—165 16 Claims



1. A filter for filtration of contaminants produced in the gas flow of a gas generator of the type used for inflation in vehicle occupant restraint systems, said filter comprising:

(a) a plurality of layers comprising plenum zones for dispersing and filtering contaminants contained in said gas flow throughout said plenum zone, each of said layers being formed of a first filter material comprising a metallic wool material, each of said layers of first filter material defining a plenum zone; and

(b) a plurality of layers of a second filter material, said second filter material being fibrous and having a porosity substantially less than said first filter material, wherein said plurality second filter material layers and said layers of plenum zones are disposed in alternating arrangement such that each layer of said second filter material is bounded on opposite sides thereof by a plenum zone layer;

(c) first porous support means located adjacent the upstream side of said plurality of plenum zones; and

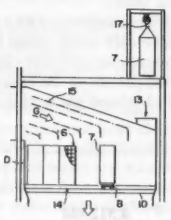
(d) second porous support means located adjacent the downstream side of said plurality of plenum zones, said second support means permitting a gas flow therethrough, said first and second filter materials disposed between said first and second support means.

4,322,386

CATALYTIC APPARATUS

Hiroshi Masutomi, and Minoru Izutsu, both of Hiroshima, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 18, 1979, Ser. No. 76,784
Claims priority, application Japan, Sep. 19, 1978, 53-114116; Sep. 19, 1978, 53-114117; Sep. 19, 1978, 53-114118; Apr. 17, 1979, 54-46050
Int. Cl.³ B01D 57/02; B01J 15/00; B60P 1/52, 9/00
U.S. Cl. 422—171 6 Claims



1. A catalytic apparatus placed in a catalytic bed in passage for exhaust gas comprising:

a plurality of catalyst elements arranged to form a catalyst block, said catalyst block being an integrated catalyst unit comprising a plurality of catalyst elements, each comprising a plurality of parallel, spaced apart catalyst plates arranged in a parallelepiped, housed in a box-shaped framework, a gap between the side of adjoining integrated catalyst units being sealed by a seal plate provided at one side of the bottom of the integrated catalyst unit;

a plate provided on each of four sides of said block for reinforcing said block;

a lattice provided on the discharge side of said block; and

a catalyst block transporting means for transporting said catalyst block into and out of said catalyst bed, said catalyst block transporting means comprising:

a car;

a vertically moving table provided on said car;

a rail extending out of said catalyst bed and for guiding said car; and

a beam provided in said catalyst bed on which a catalyst block is placed.

4,322,387

CATALYTIC EXHAUST GAS TORCH

Kashmir S. Virk, Hopewell Junction, and Martin Alperstein, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 27, 1980, Ser. No. 200,746
Int. Cl.³ F01N 3/10
U.S. Cl. 422—174 9 Claims

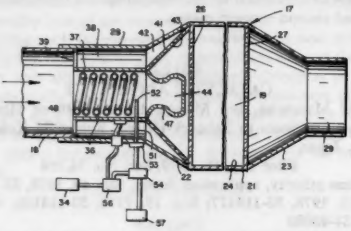
1. Filter for treating the exhaust gas stream from an internal combustion engine, which stream carries combustible particulate matter therewith, said filter including;

a casing (21) defining an elongated reaction chamber (24), including a filter media, and having a discharge conduit

(29), and an elongated inlet port (28), the latter being adapted to communicate with a source of said exhaust gas,

a catalyst bed (32) disposed at the upstream end of said reaction chamber (24) to receive exhaust gas which flows through said inlet port (28),

a heater element (36) positioned in said inlet port (28) to



contact at least a portion of the exhaust gas stream which flows through the latter,

injector means (51) communicated with a source of fuel (57) and having a nozzle (52) which opens into said inlet port (28) at a point downstream of heater element (36) to inject fuel into the heated portion of the exhaust gas stream and thereby form a fuel/heated gas mixture.

4,322,388

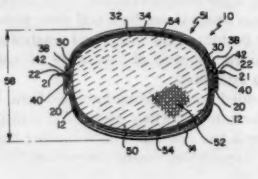
CATALYTIC CONVERTER ASSEMBLY

Leonard J. Hardin, Franklin, and Charles D. Shepherd, Columbus, both of Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Continuation of Ser. No. 97,362, Nov. 26, 1979, abandoned. This application Dec. 11, 1980, Ser. No. 215,178

Int. Cl.³ F01N *3/28, 7/18*

U.S. Cl. 422—177 **5 Claims**



1. A catalytic converter assembly comprising a housing and a catalyst-supporting substrate contained by the housing, the housing including first and second housing portions spaced apart along a longitudinal plane thereof, the first housing portion having a perimetral ridge formed substantially completely around the first housing portion in parallel to the longitudinal plane for uniformly supporting the first housing portion during fabrication of the assembly, the first housing portion terminating at a perimetral lip region, and the second housing portion having a perimetral region for insertion into engagement in the first housing porton lip region, the second housing portion further including a perimetral ridge formed substantially completely around the second housing portion in parallel to the longitudinal plane for uniformly compression-loading the perimetral insertion region of the second housing portion into the perimetral lip region of the first housing portion perpendicular to the longitudinal plane to a value within a predetermined range of values of a desired parameter.

4,322,389

INTEGRATED COAL LIQUEFACTION-GASIFICATION PLANT

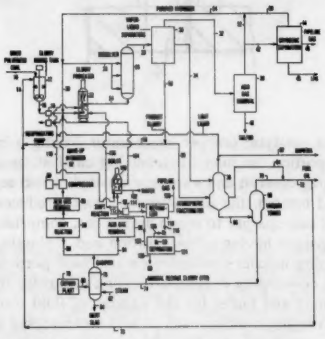
Bruce K. Schmid, Denver, Colo., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 33,109, Apr. 25, 1979, abandoned, which is a continuation of Ser. No. 905,297, May 12, 1978, abandoned. This application Jul. 22, 1980, Ser. No. 171,123

The portion of the term of this patent subsequent to Jun. 26, 1996, has been disclaimed.

Int. Cl.³ C10G *1/04, 1/08*

U.S. Cl. 422—187 **13 Claims**



1. A combination plant, comprising hydrogenative coal liquefaction plant means including

in an upstream region thereof, hydrogenative reactor means for converting feed coal in the presence of hydrogen and recycle dissolved coal and mineral residue to liquefaction plant products including hydrocarbon gases, dissolved liquid and normally solid dissolved coal together with mineral residue;

in a downstream region thereof, product vapor-liquid separator means for separating hydrocarbon gases in said liquefaction plant products from a product slurry including dissolved liquid and normally solid dissolved coal together with mineral residue; and

recycle conduit means extending from said downstream to said upstream region of said liquefaction plant means for recycling to said liquefaction plant means a portion of said product slurry;

vacuum distillation means for vacuum distilling a non-recycled portion of said product slurry to substantially completely separate dissolved liquid coal from said product slurry to form a hydrocarbonaceous vacuum slurry comprising mineral residue and substantially the entire yield of normally solid dissolved coal from said liquefaction plant means;

distillation conduit means extending from said downstream region of said liquefaction plant means to said vacuum distillation means for transporting said non-recycled portion of said product slurry to said vacuum distillation means;

oxidative slagging gasification plant means for oxidatively gasifying the hydrocarbonaceous material solely in said vacuum slurry from said vacuum distillation means to produce synthesis gas therefrom while forming molten slag;

vacuum slurry conduit means extending between said vacuum distillation means and said oxidative gasification plant means for transporting substantially only the entire hydrocarbonaceous vacuum slurry from said vacuum distillation means to said oxidative gasification plant means as substantially the entire hydrocarbonaceous feed to said gasification plant means, said vacuum slurry con-

duit means having its only inlet connected to said vacuum distillation means;

slag removal means at the bottom of said gasification plant means for the removal of slag therefrom;

shift reactor means for converting a first portion of said synthesis gas to a hydrogen-rich stream;

gasification plant conduit means extending between said gasification plant means and said shift reactor means for transporting said first portion of synthesis gas to said shift reactor means;

shift reactor conduit means extending from said shift reactor means to the hydrogenative reactor means in said liquefaction plant means for transporting said hydrogen-rich stream from said shift reactor means to said coal liquefaction plant means, said shift reactor conduit means completing a first plant circuit wherein said vacuum slurry is converted to and used for hydrogen in said hydrogenative reactor means;

at least one synthesis gas combustion zone means including synthesis gas burner means in said combination plant; and synthesis gas conduit means extending from said oxidative gasification plant means to said combustion zone means for passage of a second portion of said synthesis gas to said synthesis gas combustion zone means for burning said second portion of synthesis gas as fuel to supply energy for said combination plant, said synthesis gas conduit means completing a second plant circuit wherein said vacuum slurry is oxidatively converted to and used for fuel for said combination plant to increase the thermal efficiency of said combination plant.

4,322,390
HYDROMETALLURGICAL RECOVERY OF COPPER, COBALT NICKEL WITH REDUCTIVE AND OXIDATIVE LEACHING

William K. Tolley, Salt Lake City, Utah, and William C. Laughlin, Schaumburg, Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 27, 1980, Ser. No. 200,836
Int. Cl.[3] C22B *3/00*
U.S. Cl. 423—27 **8 Claims**

1. A process for the hydrometallurgical recovery of nickel, cobalt or copper metal values from an unreduced metal-bearing source containing said metal values which comprises treating said metal-bearing source with an aqueous solution containing a metal chelate and carbon monoxide at ambient temperatures and pressures, and thereafter subjecting said treated metal-bearing source to an oxidative leach by treatment with an oxidizing agent at oxidizing conditions, and thereafter recovering said nickel, cobalt or copper metal values.

4,322,391
PROCESS FOR THE PREPARATION OF MICROCRYSTALLINE CISPLATIN

Murray A. Kaplan, Syracuse, and Alphonse P. Granatek, Baldwinsville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 81,301, Oct. 2, 1979. This application Sep. 29, 1980, Ser. No. 191,982
Int. Cl.[3] C01D *7/00*; C22B *26/10*
U.S. Cl. 423—209 **5 Claims**

1. A process for the preparation of microcrystalline cisplatin which comprises the consecutive steps of

(a) providing a first solution comprising a liquid organic amide containing, by volume, from about 1% to about 20% of aqueous hydrochloric acid having a concentration of from about 6 N to about 12 N;

(b) dissolving cisplatin in said first solution in an amount of from about 10 to about 60 grams per liter of said first solution, to provide a second solution;

(c) admixing said second solution, with agitation, with from about 0.5 to about 5 volumes of water or dilute aqueous hydrochloric acid having a concentration up to about 0.2 N at a temperature of from about 10° C. to about 40° C. to form microcrystalline cisplatin;

(d) recovering the microcrystalline cisplatin by filtration;

(e) washing the recovered microcrystalline cisplatin with water or aqueous hydrochloric acid having a concentration up to about 0.2 N;

(f) optionally further washing the microcrystalline cisplatin with a non-reactive, water miscible, volatile, organic solvent; and

(g) optionally drying the washed microcrystalline cisplatin.

4,322,392
SO_2 SCRUBBING SYSTEM FOR FLUE GAS DESULFURIZATION

Robert J. Gleason, Edison; Mark Richman, South Bound Brook, and Paul E. Cooke, Titusville, all of N.J., assignors to Research-Cottrell, Inc., Somerville, N.J.

Continuation of Ser. No. 25,577, Mar. 30, 1979, abandoned. This application Aug. 11, 1980, Ser. No. 176,796
Int. Cl.[3] C01B *17/00*
U.S. Cl. 423—242 **20 Claims**

1. A method of operating a two-loop gas stream quencher-scrubber for scrubbing sulfur dioxide from a gas stream comprising the steps:

(a) quenching in a first loop the gas stream with a first water slurry containing an alkali;

(b) directing the discharge from the quencher to a quencher liquid storage tank;

(c) scrubbing in a second loop the quenched gas stream with a second water slurry, isolated from the first water slurry, and containing an alkali in a sulfur dioxide absorber;

(d) controlling recycled water and selective utilization of high and low solids streams from a separator by:

1. separating the water slurry discharged from the gas sulfur dioxide absorber into a low solids overflow stream and a high solids underflow stream in a liquid-solids concentrator;
2. directing the high solids portion of the scrubbing slurry to the quencher liquid storage tank;
3. continuously dewatering a portion of the quencher slurry from the quencher liquid storage tank; and
4. disposing of the solids from the dewatering step while returning the water to the quencher liquid storage tank.

4,322,393
PROCESS FOR DRYING CALCIUM CHLORIDE GENERATED IN HIGH CHLORIDE FLUE GAS DESULFURIZATION SYSTEMS

Robert J. Gleason, and Chin T. Sui, both of Somerville, N.J., assignors to Research-Cottrell, Inc., Somerville, N.J.

Filed Nov. 17, 1980, Ser. No. 207,462
Int. Cl.[3] C01B *17/00*; C01F *5/26, 11/20*
U.S. Cl. 423—242 **9 Claims**

1. A process for drying calcium chloride generated in high chloride content flue gas desulfurization systems comprising the steps:

1. by-passing a portion of hot combustion gas containing SO_2 and chlorides to a spray dryer;
2. directing a concentrated calcium chloride brine to the spray dryer;
3. removing dry predominately calcium chloride from the spray dryer;
4. redirecting the by-passed gas to the main gas stream;
5. directing the gas stream serially through a gas cleaner and a gas quencher-scrubber;
6. directing a limestone slurry to the gas quencher-scrubber to react with the SO_2 and the chlorides to form calcium sulfate and calcium chloride;
7. removing calcium sulfate from the spent limestone slurry from the quencher-scrubber and directing the remainder of the calcium chloride containing slurry to a brine concentrator and dust collector, and then to the spray dryer.

4,322,394

ADSORBENT REGENERATION AND GAS SEPARATION UTILIZING MICROWAVE HEATING

Eugene J. Mezey, and Salvatore T. Dinovo, both of Columbus, Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Continuation-in-part of Ser. No. 846,798, Oct. 31, 1977, abandoned. This application Aug. 12, 1980, Ser. No. 178,251

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—244 10 Claims

1. A process for the rapid, efficient regeneration of a saturated solid noncarbon adsorbent without thermal or mechanical degradation of the adsorbent which comprises heating the adsorbent internally and in the absence of spark discharges with microwaves between 300 MHz and 300 GHz frequency in the adsorber reactor chamber and in the absence of added activating gas to a temperature sufficient to desorb the adsorbate.

4,322,395

PROCESS FOR THE PRODUCTION OF ALUMINUM NITRIDE NEEDLES

Kelly D. McHenry, Eden Prairie; Jane M. Smeby, and Robert H. Michelson, both of Minneapolis, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 26, 1981, Ser. No. 266,853

Int. Cl.³ C01B *21/072*

U.S. Cl. 423—412 9 Claims

1. A process for fabricating aluminum nitride needles comprising the steps of:

providing aluminum powder in a crucible;

providing a gas mixture of argon and ammonia;

placing the crucible containing the aluminum powder in a metallurgical furnace so that one end of the crucible is upstream from the furnace hot zone;

heating said aluminum powder to a temperature between about 950° C. and about 1000° C. and flowing said gas mixture through said metallurgical furnace and across said crucible so that aluminum nitride needles grow upstream of the furnace hot zone.

4,322,396

HIGH PRESSURE REACTION VESSEL FOR GROWING DIAMOND ON DIAMOND SEED AND METHOD THEREFOR

Herbert M. Strong, Schenectady, N.Y., assignor to General Electric Company, Worthington, Ohio

Continuation of Ser. No. 544,493, Jan. 27, 1975, abandoned, which is a continuation of Ser. No. 412,424, Nov. 2, 1973, abandoned. This application May 9, 1980, Ser. No. 148,213

Int. Cl.³ C01B *31/06*

U.S. Cl. 423—446 14 Claims

1. In a diamond synthesis reaction vessel for introduction into the reaction volume of a high pressure, high temperature apparatus, said reaction vessel constituting an assembly of interfitting elements for enclosing diamond seed material and a source of substantially pure carbon, said diamond seed material and said source of carbon being separated by a mass of metallic catalyst-solvent material for the diamond-making reaction disposed therebetween so as to provide a predetermined temperature gradient between said diamond seed material and said source of carbon under operating conditions of pressure and temperature above the graphite-to-diamond equilibrium line on the phase diagram of carbon, said diamond seed material and said source of carbon being located in separate regions of said reaction vessel such that under said operating conditions said diamond seed material will be heated to a temperature near the minimum value of temperature for said temperature gradient and simultaneously said source of carbon will be heated to a temperature near the maximum value of temperature for said temperature gradient, the combination with said interfitting elements of

(a) a layer of diamond nucleation suppressing material disposed in direct contact with the underside of the mass of metallic catalyst-solvent material, said nucleation suppressing layer being made of a material different from the catalyst-solvent material and being a metal capable of holding back diamond nucleation at least until the seeded growth becomes quite large, well formed and capable of accepting the full carbon flux selected from the group consisting of cobalt, iron, manganese, titanium, chromium, tungsten, vanadium, niobium, tantalum, zirconium, and alloys of the preceding metals, said metal capable of holding back diamond nucleation thereby suppressing unwanted spontaneous diamond nucleation; and

(b) at least one small lump containing metallic catalyst-solvent material, said lump extending through said nucleation suppressing layer to interconnect said mass of metallic catalyst-solvent material and a single diamond seed, said lump having a cross-sectional area equivalent to a circular area having a diameter ranging from greater than 0.020" to 0.100" and having a height ranging from about 30 to about 60 mils.

4,322,397

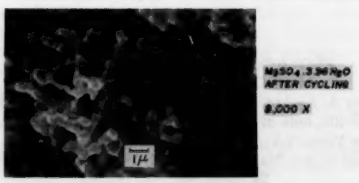
PROCESS FOR CHANGING THE MORPHOLOGY OF METAL SULFATES

Robert C. Plumb, Marlboro, and Rewat Tantayanon, Worcester, both of Mass., assignors to Worcester Polytechnic Institute, Worcester, Mass.

Filed Mar. 17, 1981, Ser. No. 244,332

Int. Cl.³ C01B *17/96;* C01F *11/46;* C01G *3/10;* B01J *35/00*

U.S. Cl. 423—544 11 Claims



1. A process for altering the morphology of an initial metal sulfate selected from the group consisting of partially dehydrated magnesium, copper, nickel and cobalt sulfates comprising the steps of cycling the temperature of said metal sulfate, in a closed initially partially evacuated vessel, between a high temperature above the temperature of dehydration of said sulfate and a low temperature below the temperature of rehydration of said sulfate, through at least 36 cycles so that the metal sulfate takes on a morphology as shown in FIG. 3 and the specific volume of the metal sulfate substantially increases.

4,322,398

IMPLANTABLE DRUG DEPOT AND PROCESS FOR THE PRODUCTION THEREOF

Roland Reiner, Eishborn; Wolfgang KiBing, Eschwege; Helga Döring, Cologne; Kari Köster-Lösche, Usingen, and Helmut Heide, Kelkheim, all of Fed. Rep. of Germany, assignors to Battelle Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,068

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1978, 2807132

Int. Cl.³ A61K *9/26, 9/32;* A61L *15/03*

U.S. Cl. 424—19 17 Claims

1. An implantable drug depot for the treatment of diseases of the bone or bone marrow, consisting of a matrix in which at least one therapeutically active ingredient is incorporated and which contains a polymer of methyl cyanoacrylate, which helps control the rate of release of said therapeutically active ingredient, said matrix material consisting of resorbable sintered calcium phosphate composed of CaO and P_2O_5 in a ratio between 5:1 and 2:1.

4,322,399

VAGINAL SUPPOSITORY

Nawaz Ahmad, Piscataway; Leonard Kaplan, East Brunswick, and George Ziets, Flemington, all of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Oct. 19, 1979, Ser. No. 86,621

Int. Cl.³ A61K *9/00, 31/09*

U.S. Cl. 424—44 13 Claims

1. A spermicidally active vaginal suppository comprising about 2–7% by weight of an alkylphenoxypolyethoxyethanol as the spermicide, about 75–85% of a mixture of water-soluble polyethylene glycols as the suppository base, about 5–7% of a mixture of an organic acid and an inorganic bicarbonate as the foaming agent and about 4–10% of a mixture of an amphoteric surfactant selected from the group consisting of Amphoteric-1, Amphoteric-2, Amphoteric-5, Amphoteric-6, Amphoteric-9, Amphoteric-10, Amphoteric-14, Amphoteric-19, Amphoteric-20, Monateric CA, Monateric CSH-32, Monateric ISA-35, Monateric CM-36S, Monateric 805 and Monateric CAB and a water-soluble film-forming agent selected from the group consisting of Povidone K26-28, Povidone K29-32, cellulose gum, hydroxyethylcellulose, cellulose ether, Reten 205 and sodium alginate as the foam-stabilizing agent.

4,322,400

COSMETIC STICK COMPOSITION

Edward R. Yuhas, Yonkers, N.Y., assignor to Dragoco Inc., Totowa, N.J.

Continuation-in-part of Ser. No. 971,113, Dec. 19, 1978, Pat. No. 4,226,889. This application Sep. 18, 1979, Ser. No. 76,663

Int. Cl.³ A61K *7/42, 7/44, 31/055, 7/021*

U.S. Cl. 424—59 27 Claims

1. In an improved cosmetic stick composition having an aqueous sodium stearate and water environment consisting essentially of:

(1) an aqueous sodium stearate-water vehicle formed of:

(a) 100 parts by weight of water; and

(b) from about 1 to about 30 parts by weight of sodium stearate;

(2) from about 0.05 to about 50 weight percent, based upon the total weight of the composition, of at least one cosmetic active ingredient intended to be deposited on human skin, which ingredient is stable in the aqueous alkaline environment provided by said sodium stearate-water vehicle; wherein the improvement comprises

(3) sodium chloride in an amount of from about 0.5 weight percent to about 5 weight percent, based upon the water-sodium stearate vehicle, to increase the setting point of said composition and to inhibit syneresis.

4,322,401

PERMANENT-WAVE SOLUTION

Morio Harada, 4-19 Kamigakicho, Nishinomiya-shi, Hyoga-ken, Japan

Filed Dec. 18, 1980, Ser. No. 218,010

Claims priority, application Japan, Dec. 29, 1979, 54-173538

Int. Cl.³ A61K *7/09*

U.S. Cl. 424—72 3 Claims

1. A permanent-wave solution consisting essentially of an aqueous alkaline solution of a permanent wave effective amount of cysteine and a stabilizing amount of an organic acid anhydride selected from the group consisting of succinic anhydride and phthalic anhydride as solubilizing agent in a molar ratio of about 0.1 to about 0.5 per each mole of cysteine.

4,322,402

GERMANIUM-CONTAINING ORGANIC POLYMER AND ITS USE IN THE TREATMENT OF ALLERGIC DISEASE

Akira Ishikawa, Tokyo; Yukihito Ishida, Fujisawa; Shiro Ikegami, Funabashi; Hiroshi Satoh, Tokyo; Ryuichi Sato, Gunma; Setsuo Tomisawa, Tokyo, and Shigeru Toyoshima, Funabashi, all of Japan, assignors to Ryuichi Sato, Tokyo, Japan

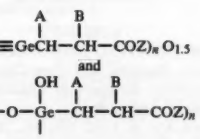
Division of Ser. No. 12,151, Feb. 14, 1979, Pat. No. 4,271,084. This application Feb. 29, 1980, Ser. No. 125,929

Claims priority, application Japan, Mar. 1, 1978, 53-21992; Mar. 1, 1978, 53-21993

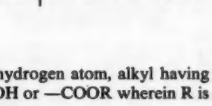
Int. Cl.³ A61K *31/74, 31/28*

U.S. Cl. 424—78 1 Claim

1. A method of treating an animal suffering from bronchial asthma, which comprises; administering to said animal an effective amount to relieve said suffering of a polymer selected from those of the formulae:



and



wherein

A represents a hydrogen atom, alkyl having 1 to 3 carbon atoms, —COOH or —COOR wherein R is alkyl having 1 to 3 carbon atoms;

B represents a hydrogen atom or alkyl having 1 to 3 carbon atoms;

Z represents hydroxy, alkoxy having 1 to 3 carbon atoms or alkyl having 1 to 3 carbon atoms; and n is an integer greater than 3, inclusive.

4,322,403

METHOD FOR THE PREPARATION OF AN IMMUNE GLOBULIN SOLUTION SUITABLE FOR INTRAVENOUS USE

Karl Bünnig, Bad Münder, Fed. Rep. of Germany, assignor to Blutspendedienst der Landesverbände des Deutschen Roten Kreuzes Niedersachsen, Oldenburg and Bremen Gemeinnützige G.m.b.H., Springe, both of, Fed. Rep. of Germany

Continuation of Ser. No. 67,721, Aug. 20, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,001

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1978, 2837168

Int. Cl.³ A61K *39/00, 39/395*

U.S. Cl. 424—85 5 Claims

1. In a method for making immune globulin solution suitable for intravenous use, which method includes preparing a raw immune globulin solution by the fractionation of blood plasma, said fractionation including adjusting the blood plasma to a pH

of greater than about 6.8, a conductivity of greater than about 11.0 mS cm^{-1} (20° C.), and a protein concentration of less than about 65 g/l, then treating said plasma with silicic acid compounds to separate specific proteins therefrom, the improvement comprising, in combination:

(a) adjusting the protein concentration of said raw immune globulin solution to about 130 g/l;

(b) adjusting the conductivity of said raw immune globulin solution to about 1.1 mS cm^{-1} (20° C.);

(c) adjusting the pH of said raw immune globulin solution to and between about 6.5–6.8; and

(d) treating said raw immune globulin solution with an aqueous, humid, amorphous, chemically pure silicic acid compound of submicroscopically-fine distribution, followed by separating said immune globulin solution, so treated, from said silicic acid compounds to yield an immune globulin solution suitable for intravenous use.

4,322,404

PROCESS FOR THE PRODUCTION OF NEW MUTANTS OF HERPES SIMPLEX VIRUS TYPE 1 AND TYPE 2

Kailash K. Gauri, Zur Waldburg 13, 2359 Lentfohrden; Klaus Pressler, Mikrobiologe, Forellenweg 23, 4800 Bielefeld 1, and Klaus-Dirk Schenk, Mikrobiologe, Heinestrasse 6, 4803 Steinhagen, all of Fed. Rep. of Germany

Filed Jun. 8, 1981, Ser. No. 271,106

Claims priority, application United Kingdom, Jun. 12, 1980, 19308/80

Int. Cl.³ A61K *39/12;* **C12N** *7/06*

U.S. Cl. 424—89 **14 Claims**

1. A process for the production of mutated herpes virus comprising treating herpes simplex virus Type 1 or herpes simplex virus Type 2 in two steps with phosphono formic acid and with 5-ethyl-2'-desoxyuredine.

4,322,405

METHOD FOR TREATING RHEUMATOID ARTHRITIS

Adrian Schultheiss, Begnins, and Jean-Claude Farine, Eysins, both of Switzerland, assignors to Laboratoires OM Societe Anonyme, Geneva, Switzerland

Filed Apr. 6, 1981, Ser. No. 251,549

Int. Cl.³ A61K *37/00*

U.S. Cl. 424—93 **2 Claims**

1. A method for treating a human being suffering from rheumatoid arthritis, comprising administering to said human being, a pharmaceutically active amount of a bacterial lysate derived from strains of *Escherichia coli,* in a pharmaceutically acceptable carrier.

4,322,406

ANTIBIOTIC A-4696 FACTORS B_1, B_2, B_3, C_{1a}, C_3 AND E_1

Manuel Debono, Indianapolis; Kurt E. Merkel, Mooresville; Robert E. Weeks, and Herald J. Cole, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 18, 1980, Ser. No. 217,962

Int. Cl.³ A61K *35/00, 7/16*

U.S. Cl. 424—118 **6 Claims**

1. Antibiotic A-4696 factor B_1, or a pharmaceutically acceptable inorganic acid addition salt thereof, which factor in the form of its hydrochloride salt is a white, crystalline substance soluble in water and hydroxylic and polar solvents, and insoluble in ether, chloroform, benzene, acetone, aliphatic hydrocarbons, and chlorinated hydrocarbons; has the approximate composition of 51.51 percent carbon, 5.25 percent hydrogen, 4.88 percent nitrogen, 4.62 percent chlorine, and oxygen comprising the remainder; has an approximate theoretical molecular weight of 1954; has an ultraviolet absorption maximum in water at 280 nm with an $E_{1cm}^{1\%}$ of 42.8; and has the following distinguishable bands in its infrared absorption spectrum when determined in KBr: 3380 broad, 2930, 1731, 1693, 1654, 1637, 1615, 1588, 1577, 1521, 1503, 1488, 1423, 1321, 1289, 1229, 1210, 1178, 1154, 1121, 1076, 1060, 1030, 1012, 982, 880, 842, 831, and 810 cm^{-1}.

4,322,407

ELECTROLYTE DRINK

Sai Y. Ko, Burwood, Australia, assignor to Vitapharm Pharmaceutical Pty. Ltd., Moorabbin, Australia

Continuation-in-part of Ser. No. 86,098, Oct. 18, 1979, abandoned. This application May 29, 1980, Ser. No. 154,259

Claims priority, application Australia, Dec. 11, 1978, PD7077

Int. Cl.³ A61K *31/70, 33/06, 33/14, 33/42*

U.S. Cl. 424—128 **9 Claims**

9. A drink concentrate which comprises an admixture of sodium chloride, potassium chloride, anhydrous magnesium sulphate, dodecahydrated disodium hydrogen phosphate, hydrated sodium dihydrogen phosphate, dextrose, sucrose, ascorbic acid, pyridoxine hydrochloride, sodium citrate, citric acid and lemon flavoring, present for each 10 grams of concentrate in the following amounts

sodium chloride:69.6 mg.
potassium chloride:288.0 mg.
magnesium sulphate:148.0 mg.
sodium citrate:120.0 mg.
disodium hydrogen phosphate:480.0 mg.
sodium dihydrogen phosphate:111.6 mg.
ascorbic acid:100.0 mg.
pyridoxine hydrochloride:25.0 mg.
citric acid:420.0 mg.
sucrose:4.8 gm.
dextrose:3.18 gm.
lemon flavouring:257.8 mg.

4,322,408

PHARMACEUTICAL COMPOSITION CONTAINING A DERIVATIVE OF PARA-AMINOBENZOIC ACID AS AN ACTIVE INGREDIENT

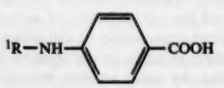
Chikao Yoshikumi, Kunitachi; Yoshio Ohmura, Funabashi; Fumio Hirose, Tokyo; Masanori Ikuzawa, Tachikawa; Kenichi Matsunaga, Tokyo; Takayoshi Fujii, Tokyo; Minoru Ohhara, Tokyo, and Takao Ando, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 24,095, Mar. 26, 1979, abandoned. This application Oct. 2, 1979, Ser. No. 81,190

Int. Cl.³ A61K *31/70*

U.S. Cl. 424—180 **9 Claims**

1. A method for the treatment of hypertension which comprises administering to an animal suffering from hypertension an effective amount of a compound of the formula:



wherein ¹R denotes one member selected from the group consisting of the residual groups formed by removing OH at 1(alpha) or 1(beta) position from arabinose, glucose, galactose and mannose, or a pharmaceutically acceptable salt thereof.

4,322,409

PHARMACEUTICAL COMPOSITION CONTAINING A DERIVATIVE OF ORTHOAMINOBENZOIC ACID AS AN ACTIVE INGREDIENT

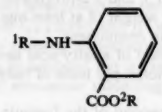
Chikao Yoshikumi, Kunitachi; Yoshio Ohmura, Funabashi; Fumio Hirose, Tokyo; Masanori Ikuzawa, Tachikawa; Kenichi Matsunaga, Tokyo; Takayoshi Fujii, Tokyo; Minoru Ohhara, Tokyo, and Takao Ando, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 24,092, Mar. 26, 1979, abandoned. This application Oct. 12, 1979, Ser. No. 84,467

Int. Cl.[3] A61K *31/70*

U.S. Cl. 424—180 14 Claims

1. A method for the treatment of hypertension, which comprises administering to a mammal suffering from hypertension an effective amount of a compound of the formula:



wherein ^1R denotes one member selected from the group consisting of the residual groups formed by removing OH at 1(alpha) or 1(beta) position from arabinose, xylose, glucose, galactose, rhamnose and mannose, and

^2R is hydrogen or methyl group, or a pharmaceutically acceptable salt thereof.

4,322,410

P-ACETAMINOPHENYL PHOSPHATE SALTS AS ANALGESICS AND ANTIPYRETICS

Milorad Stjepanovic, Chatou; Michèle Moreau, née Huguet, Paris, both of France, and Jacques Dugniolle, 8 rue du Centre, Neuilly sur Seine, France (92200), assignors to Jacques Dugniolle, Neuilly sur Seine, France

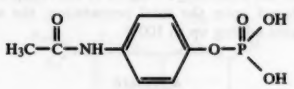
Filed Dec. 4, 1979, Ser. No. 100,005

Claims priority, application France, Dec. 15, 1978, 78 35429

Int. Cl.[3] A61K *31/71;* C07F *9/09*

U.S. Cl. 424—180 10 Claims

1. Para-acetaminophenyl phosphate of the formula



or a salt thereof with a pharmaceutically acceptable mineral or organic base.

2. A method of alleviating pain or hyperthermia in an animal comprising orally or parenterally administering a compound as defined by claim 1.

4,322,411

ANTI-INFLAMMATORY NUCLEOSIDES

Ralph Vinegar, Chapel Hill, and Gerald Wolberg, Cary, both of N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Apr. 25, 1980, Ser. No. 143,833

Int. Cl.[3] A61K *31/70*

U.S. Cl. 424—180 10 Claims

1. A method for the treatment of inflammation in mammals suffering from an inflammatory condition which comprises the administration of an inflammation-reducing, non-toxic amount of an active compound selected from the group consisting of 4-amino-1-β-D-ribofuranosyl-1H-imidazo-[4,5,-c]-pyridine and a pharmaceutically acceptable salt thereof.

4,322,412

ANTHRACYCLINE GLYCOSIDES, THEIR PREPARATION, USE AND COMPOSITIONS THEREOF

Giuseppe Cassinelli, Voghera; Salvatore Forenza, Milan; Maria C. Ripamonti, Monza, and Daniela Ruggieri, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

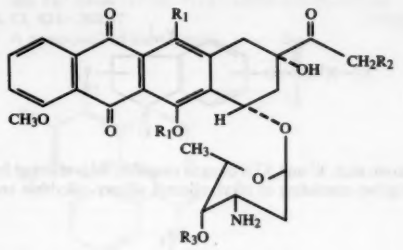
Filed Jul. 14, 1980, Ser. No. 168,157

Claims priority, application United Kingdom, Jul. 4, 1979, 23225/79

Int. Cl.[3] A61K *31/71;* C07H *15/24*

U.S. Cl. 424—180 12 Claims

1. A compound of the formula:



wherein R_1 is hydrogen or methoxy, R_2 is hydrogen or hydroxy, and each of R_3 and R_4 is independently hydrogen or methyl, with the proviso that R_3 and R_4 are not simultaneously hydrogen and the pharmaceutically acceptable acid addition salts thereof.

12. A method of inhibiting the growth of transplanted P388 leukemia comprising intraperitoneally administering to a host afflicted therewith, a therapeutically effective amount of a compound as claimed in claim 1.

4,322,413

1,2,3,5-THIATRIAZOLIDIN-4(2H)-ONE-1,1-DIOXIDE PHOSPHORIC ACID DERIVATIVES AND THEIR USE FOR COMBATING PESTS

Annegrit Baumann, Mannheim; Karl Kiehs, Lampertheim; Gerhard Hamprecht, Weinheim; Arno Lange, Mannheim, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

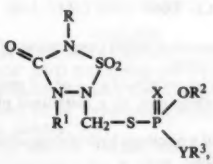
Filed Jan. 6, 1981, Ser. No. 222,891

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1980, 3003977

Int. Cl.[3] A01N *57/16;* C07F *9/65*

U.S. Cl. 424—200 5 Claims

1. A heterocyclic phosphoric acid derivative of the formula



I

where R denotes unsubstituted or methoxy- or halogen-substituted alkyl of up to 10 carbon atoms or cycloalkyl of from 4 to 8 carbon atoms, R^1 denotes alkyl of up to 6 carbon atoms or cycloalkyl of from 4 to 8 carbon atoms, R^2 denotes alkyl of up to 5 carbon atoms, R^3 denotes alkyl of up to 5 carbon atoms, X denotes oxygen or sulfur, and Y denotes oxygen, sulfur or the bivalent radical —NR^4—, R^4 denoting hydrogen or alkyl of up to 5 carbon atoms.

5. A process for combating insects, Acarina and Nematodes which comprises applying to the pests or their habitat a pesti-

cidally effective amount of a heterocyclic phosphoric acid derivative of the formula I as set forth in claim 1.

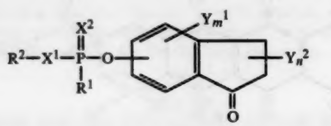
4,322,414

INDANONYL PHOSPHATES AS INSECTICIDES

Takeo Hokama, Chicago, and James T. Traxler, Evanston, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

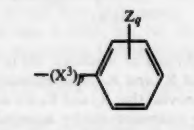
Filed Nov. 28, 1980, Ser. No. 210,933
Int. Cl.^{3} A01N *57/12;* C07F *9/177*
U.S. Cl. 424—214 9 Claims

1. A compound of the formula:



(I)

wherein each X^1 and X^2 is oxygen or sulfur; R^1 is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio and:



wherein X^3 is oxygen or sulfur, p is the integer 0 or 1, Z is selected from the group consisting of alkyl, halogen, alkoxy, alkylthio, haloalkyl and nitro, and q is an integer from 0 to 3; R^2 is selected from the group consisting of alkyl and alkenyl; Y^1 and Y^2 are each selected from the group consisting of alkyl, halogen, nitro, alkoxy, alkylthio and haloalkyl; and m and n are integers from 0 to 2.

9. A method of controlling insects which comprises contacting said insects with an insecticidal composition comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to insects, a compound of claim 1.

4,322,415

STABLE CONCENTRATED LIQUID PREPARATIONS OF METAL COMPLEX DYES

Heinz Abel, Reinach; Paul Hugelshofer, Muttenz, and Arthur Bühler, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 870,901, Jan. 19, 1978, abandoned. This application Jun. 13, 1980, Ser. No. 159,256
Claims priority, application Luxembourg, Jan. 24, 1977, 76632
Int. Cl.^{3} D06P *1/10, 1/647, 1/90*
U.S. Cl. 424—226 32 Claims

1. A stable concentrated liquid preparation of a metal complex dye, which contains

(1) 10 to 60 percent by weight of a 1:1 or 1:2 metal complex of an azo or azomethine dye, or a metallized phthalocyanine dye

(2) 5 to 25 percent of a nonionic hydrotropic compound which is a reaction product

(i) having a molecular weight of about 2,000 to 7,000 of (a_1) a monohydric to hexahydric alkanol of 1 to 6 carbon atoms, a monoalkyl- or monoalkylol-monoamine having 1 to 6 carbon atoms, or a polyalkylenepolyamine of the formula

$$H_2N(CH_2CH_2NH)_rCH_2CH_2NH_2$$

wherein r is 0 to 3, and (a_2) 1,2-propylene oxide;

(ii) of a water-insoluble saturated or unsaturated, branched or straight chain aliphatic monoalcohol of 8 to 18 carbon atoms and ethylene oxide, 1,2-propylene oxide or mixtures thereof;

(iii) of a phenylphenol, or an alkylphenol having 4 to 12 carbon atoms in the alkyl moiety thereof, and ethylene oxide, 1,2-propylene oxide or mixtures thereof;

(iv) of an alkylene dicarboxylic acid having 3 to 10 carbon atoms, and 1,2-propylene oxide or polypropylene glycol;

(v) of a fatty acid having 10 to 18 carbon atoms, and 1,2-propylene oxide or polypropylene glycol;

(vi) of a fatty acid having 10 to 18 carbon atoms, a trihydric to hexahydric alkanol having 3 to 6 carbon atoms and 1,2-propylene oxide; or

(vii) of a fatty acid having 10 to 18 carbon atoms, a polyalkylenepolyamine of the formula

$$H_2N(CH_2CH_2NH)_rCH_2CH_2NH_2$$

wherein r is 0 to 3, and 1,2-propylene oxide; and

4 to 20 percent by weight of at least one of the components (3) and (4), wherein component

(3) is a reaction product of a fatty acid having 8 to 22 carbon atoms and 1 or 2 moles, per mole of fatty acid, of diethanolamine;

(4) is an anionic compound of the formula

$$R{-}A{-}(CH_2\underset{\substack{|\\R_1}}{C}HO)_m{-}X$$

wherein R is an aliphatic hydrocarbon radical of 8 to 22 carbon atoms, or a cycloaliphatic, aromatic or aliphatic-aromatic hydrocarbon radical having 10 to 22 carbon atoms, R_1 is hydrogen or methyl, A is —O— or —COO—, X is an acid radical or an inorganic oxygen containing polybasic acid, the acid radical of a polybasic lower carboxylic acid or is $—CH_2COOH$, or a salt thereof, and m is 1 to 50;

(5) 20 to 80 percent by weight water, a water-soluble organic solvent having a boiling point of at least 80° C. or a mixture thereof; and in the further presence or absence of

(6) one or more conventional dyestuff formulating agents selected from the group consisting of inorganic salts, sodium benzene sulfonate, lignin sulfonates, dinaphthylmethanedisulfonates, sugars, dextrin, urea, foam control assistants, fungal growth inhibitors, bacterial growth inhibitors, acids and bases;

and wherein the percentage weights of the components (1) to (6) are based upon the total preparation, the sum of the components adding up to 100%.

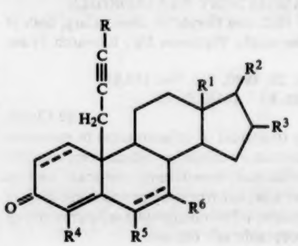
4,322,416

10-ALKYNYL STEROIDS

Brian W. Metcalf, Mason, and J. O'Neal Johnston, Milford, both of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

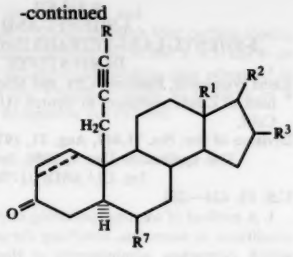
Continuation-in-part of Ser. No. 163,451, Jun. 27, 1980, abandoned. This application Apr. 27, 1981, Ser. No. 258,214
Int. Cl.^{3} A61K *31/56;* C07J *1/00*
U.S. Cl. 424—242 25 Claims

1. Compound having the formula



or

-continued



wherein ═══ represents a single or a double bond; R is hydrogen or C_{1-4} alkyl; R^1 is methyl or ethyl; R^2 is (H)(OR^8) or =O; R^3 is H or C_{1-3} alkyl; R^4 is H or OR^8; R^5 is H, C_{1-3} alkyl or, when the 5,6-bond is saturated, R^5 can be divalent =O; R^6 and R^7 are each H or C_{1-3} alkyl; and R^8 is H or C_{2-4} alkanoyl.

20. A method of treating hyperestrogenemia which comprises administering to a subject having said condition a therapeutically effective aromatase inhibiting amount of a compound of claim **1**.

4,322,417

ANTIHYPERTENSIVE POLYFLUOROISOPROPYL TRICYCLIC CARBOSTYRILS

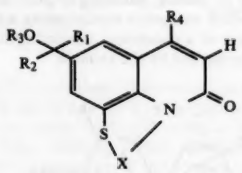
Paul E. Aldrich, Wilmington, Del., and Gilbert H. Berezin, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 22, 1977, Ser. No. 863,267

Int. Cl.[3] **A61K** *31/38;* **C07D** *271/16, 229/20, 281/02*

U.S. Cl. 424—246 **30 Claims**

1. A compound of the formula



where

R_1=CF_3 or CF_2H;

R_2=CF_3, CF_2H or CF_2Cl;

R_3=H, acyl selected from alkanoyl, alkenoyl or hydrocarbon aroyl or alkyl of 1–6 carbon atoms;

R_4=methyl or ethyl;

$$X = -\underset{\displaystyle R_5}{\underset{|}{CH}}-CH_2- \text{ or } -\underset{\displaystyle R_5}{\underset{|}{CH}}-CH_2-CH_2-;$$

R_5=H, methyl or ethyl; and pharmaceutically suitable salts, when R_3=H.

21. A method of treating hypertension in a mammal which comprises administering to a mammal an effective antihypertensive amount of a compound of claim **1**.

4,322,418

SUBSTITUTED 1-(α-AMINOCARBONYL-BENZYL)-3,4-DIHYDRO-ISOQUINOLINES, COMPOSITIONS AND USE

Walter Lösel, Gau-Algesheim; Franz Esser, Ingelheim am Rhein; Otto Roos, Schwabenheim; Richard Reichl, Gau-Algesheim; Franz J. Kuhn, Bingen, and Werner Traunecker, Münster-Sarmsheim, all of Fed. Rep. of Germany, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Fed. Rep. of Germany

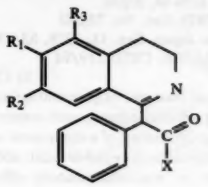
Filed Apr. 3, 1981, Ser. No. 250,667

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1980, 3013906

Int. Cl.[3] **A61K** *31/535, 31/47;* **C07D** *413/06, 217/18*

U.S. Cl. 424—248.57 **7 Claims**

1. A compound of the formula



wherein

R_1, R_2, R_3, which may be the same or different, each represent a hydrogen, hydroxyl, or methoxy group or R_1 and R_2, R_2 and R_3, or R_1 and R_3 together represents a methylenedioxy group; and

X represents a dialkylamino in which each alkyl moiety has from 1 to 3 carbon atoms; a heterocyclic group; or the group

—NHR

wherein R represents a lower alkyl group of from 1 to 4 carbon atoms; alkenyl or alkinyl group of 3 carbon atoms; cycloalkyl group of from 3 to 6 carbon atoms; morpholino group; pyridyl group; or ethyl or propyl group substituted by a hydroxyl, methoxy, dimethylamino, phenyl, methoxyphenyl, dimethoxyphenyl, methylenedioxyphenyl, morpholino, or indolyl group,

in racemic or optically active form, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

7. A method of promoting blood flow and stimulating the circulation in a warm-blooded animal which comprises perorally, parenterally, or rectally administering to said animal an effective blood circulation stimulating amount of a compound of claim **1**.

4,322,419

BICYCLOMYCIN DERIVATIVES, COMPOSITIONS THEREOF AND PROCESS OF USE THEREOF

Beat Müller, Reinach; Wilhelm Kump, Biel-Benken, and Oskar Wacker, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 796,286, May 12, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 1,996

Claims priority, application Switzerland, May 21, 1976, 6445/76

Int. Cl.[3] **A61K** *31/495;* **C07D** *498/08*

U.S. Cl. 424—250 **9 Claims**

1. A 2-oxa-7,9-diazabicyclo[4,2,2]-decane derivative, which is selected from the group consisting of the following compounds: 5-benzyloxyimino-5-nor-bicyclomycin; 5-carboxymethoxyimino-5-nor-bicyclomycin; 5-methoxyimino-5-nor-bicyclomycin-6,1',3'-tri-tetrahydropyranyl ether; 5-nor-bicyclomycin-5-one phenylhydrazone, 5-nor-bicyclomycin-5-one semi-

carbazone, and 5-nor-bicyclomycin-5-one pyridinioacetylhydrazone chloride.

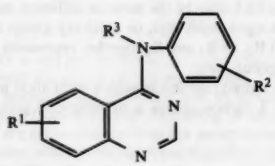
8. A method of treating anti-bacterial diseases which comprises enteral or parenteral administration of a therapeutically effective dose of a compound according to any one of claims 1 to 6.

4,322,420
METHOD OF USING 4-ANILINOQUINAZOLINE DERIVATIVES AS ANALGESIC AND ANTI-INFLAMMATORY AGENTS

Shinsaku Kobayashi; Katsuo Kamoshita, both of Tokyo; Shigeki Nagai, Ube; Takeo Honda, Ube; Kiroku Oda, Ube; Katsutoshi Fujii, Ube; Takashi Kobayashi, Ube, and Mikio Kojima, Ube, all of Japan, assignors to Sankyo Company Limited, Tokyo and UBE Industries, Ube, both of, Japan

Filed Sep. 11, 1979, Ser. No. 74,343
Claims priority, application Japan, Sep. 11, 1978, 53/111484
Int. Cl.³ A61K *31/505*; C07D *239/94*
U.S. Cl. 424—251 **11 Claims**

1. A method of alleviating at least one of pain and inflammation in a mammal comprising administering to said mammal an agent selected from the group consisting of a compound of the formula (I) and pharmacologically acceptable acid addition salts thereof in an analgesic or anti-inflammatory effective amount:



(I)

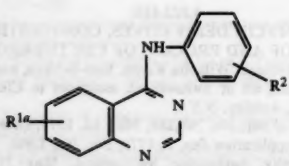
in which:

R^1 represents a hydrogen atom, a halogen atom, a trifluoromethyl group or a nitro group;

R^2 represents a hydrogen atom, a C_1–C_4 alkyl group, an alkoxy group or a halogen atom; and

R^3 represents a hydrogen atom or a C_1–C_4 alkyl group; provided that R^1 does not represent a hydrogen atom or a chlorine atom in a 6- position when R^2 and R^3 both represent hydrogen atoms.

9. A method of alleviating at least one of pain and inflammation in a mammal comprising administering to said mammal an agent selected from the group consisting of a compound of the formula (Ia) and pharmacologically acceptable acid addition salts thereof in an analgesic or anti-inflammatory effective amount:



(Ia)

in which:

R^{1a} represents a halogen atom or a trifluoromethyl group; and

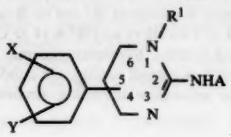
R^2 represents a hydrogen atom, a C_1–C_4 alkyl group, an alkoxy group having a C_1–C_4 alkyl moiety or a halogen atom; provided that R^{1a} does not represent a chlorine atom in the 6-position when R^2 represents a hydrogen atom.

4,322,421
4-PHENYL-AND 5-PHENYL-1,4,5,6-TETRAHYDRO-PYRIMIDINE DERIVATIVES

Klaus Weinhardt, Redwood City, and Michael Marx, Sunnyvale, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 71,442, Aug. 31, 1979, Pat. No. 4,261,995.
This application Dec. 1, 1980, Ser. No. 211,610
Int. Cl.³ A61K *31/505*
U.S. Cl. 424—251 **7 Claims**

1. A method of treating, palliating or preventing undesirable conditions, in mammals, involving the central nervous system which comprises administering a therapeutically effective amount of a compound selected from the group of compounds represented by the formula



(I)

wherein

A is H or

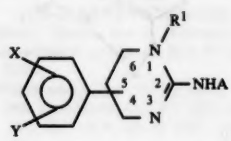
where R is alkyl of one through six carbon atoms;

X is hydrogen, fluoro, chloro, bromo, iodo, hydroxy, alkoxy of one through four carbon atoms, benzyloxy, alkyl of one through four carbon atoms, alkylthio of one through four carbon atoms, alkylsulfinyl of one through four carbon atoms, alkylsulfonyl of one through four carbon atoms or trifluoromethyl; and

Y is hydrogen or is the same as X; and

R^1 is hydrogen or alkyl of one through four carbon atoms; the phenyl substituent carrying the X and Y is at the 4- or 5-position of the tetrahydropyrimidine ring when R^1 is hydrogen or is at the 5-position when R^1 is alkyl; or a pharmaceutically acceptable salt thereof.

4. A method of treating, palliating or preventing depression in mammals which comprises administering a therapeutically effective amount of a compound selected from the group of compounds represented by the formula



(I)

wherein

A is H or

where R is alkyl of one through six carbon atoms;

X is hydrogen, fluoro, chloro, bromo, iodo, hydroxy, alkoxy of one through four carbon atoms, benzyloxy, alkyl of one through four carbon atoms, alkylthio of one through four carbon atoms, alkylsulfinyl of one through four carbon atoms, alkylsulfonyl of one through four carbon atoms or trifluoromethyl; and

Y is hydrogen or is the same as X; and

R^1 is hydrogen or alkyl of one through four carbon atoms; the phenyl substituent carrying the X and Y is at the 4- or 5-position of the tetrahydropyrimidine ring when R^1 is hydrogen or is at the 5-position when R^1 is alkyl; or a pharmaceutically acceptable salt thereof.

4,322,422

OXALYLATED AMIDINOHYDRAZONES, METHOD FOR PREPARING SAME AND USE AS INSECT AND FIRE ANT CONTROL AGENTS

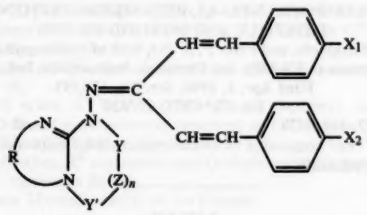
Roger W. Addor, Pennington, and Thomas W. Drabb, Jr., Trenton, both of N.J., assignors to American Cyanamid Co., Stamford, Conn.

Filed May 13, 1980, Ser. No. 149,402

Int. Cl.³ A61K *31/505;* **C07D** *487/04*

U.S. Cl. 424—251 **26 Claims**

16. A method for controlling insects comprising: contacting the insects, their habitat, and/or their food supply, with an insecticidally effective amount of a compound having the structure:



wherein R is a C_2–C_4 alkylene chain which may optionally be substituted with one or two C_1–C_2 alkyl group(s) or with one phenyl group; or $—CH_2—CH=CH—CH_2—$; X_1 and X_2 each are halogen, CF_3, CHF_2O, CF_3O, CHF_2CF_2O, CHF_2S, C_1–C_3 alkyl or; C_1–C_3 alkoxy; Y and Y' each is $—CH_2—$ or

with the proviso that at least one of Y and Y' must be

Z is $—CH_2—$ or $—C(CH_3)_2—$; and n is 0 or 1; and when n is 1, Y and Y' must be

4,322,423

4-PHENYL-4,5,6,7-TETRAHYDRO-THIENO(2,3-C)PYRIDINES AND SALTS THEREOF

Claus Schneider, Ingelheim am Rhein; Karl-Heinz Weber; Adolf Langbein, both of Gau-Algesheim; Wolf D. Bechtel, Appenheim, and Karin Böke, Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

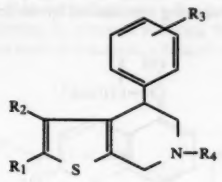
Continuation-in-part of Ser. No. 945,438, Sep. 25, 1978, abandoned. This application Mar. 27, 1980, Ser. No. 134,441

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1977, 2746443; Jul. 29, 1978, 2833378

Int. Cl.³ C07D *495/04, 495/14;* **A61K** *31/44*

U.S. Cl. 424—256 **7 Claims**

1. A compound of the formula



wherein

R_1 is chlorine, bromine or alkyl of 1 to 3 carbon atoms;

R_2 is hydrogen or, when R_1 is alkyl, chlorine or bromine; or

R_1 and R_2, together with each other, are straight alkylene of 3 to 4 carbon atoms;

R_3 is hydrogen, fluorine, chlorine, bromine, alkyl of 1 to 2 carbon atoms, hydroxyl or trifluoromethyl; and

R_4 is hydrogen, straight or branched alkyl of 1 to 4 carbon atoms or phenyl-lower alkyl;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

7. The method of elevating the mood of a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective mood-elevating amount of a compound of claim **1**.

4,322,424

CRYSTALLINE GLUCOCONATE SALT OF M-AMSA AND COMPOSITIONS CONTAINING SAME

Daniel Bouzard, Franconville; Claude Perol, Paris; Jacques Stemer, Paris; Abraham Weber, Paris, all of France, and Edmund S. Granatek, Syracuse, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation of Ser. No. 114,809, Jan. 24, 1980, abandoned. This application Oct. 17, 1980, Ser. No. 194,350

Int. Cl.³ C07D *219/10;* **A61K** *31/47*

U.S. Cl. 424—257 **7 Claims**

1. The crystalline gluconate salt of m-AMSA.

2. A stable, solid, water-soluble composition for reconstitution with water or aqueous vehicle as a stable solution of m-AMSA, said composition comprising a mixture of about one mole of m-AMSA gluconate salt per one to three moles of an organic acid selected from the group consisting of gluconic acid, gluconolactone and mixtures thereof.

4,322,425

COMPOSITIONS FOR TREATING GLAUCOMA

Yoichi Yabuuchi; Shiro Yoshizaki, and Kazuyuki Nakagawa, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

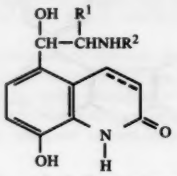
PCT No. PCT/JP79/00185, § 371 Date Mar. 14, 1980, § 102(e) Date Mar. 14, 1980, PCT Pub. No. WO80/00215, PCT Pub. Date Feb. 21, 1980

PCT Filed Jul. 13, 1979, Ser. No. 191,245

Int. Cl.³ A61K *31/47*

U.S. Cl. 424—258 6 Claims

1. A method for treating glaucoma comprising administering to a patient a glaucoma treating composition comprising an intraoccular pressure reducing effective amount of a carbostyril derivative, or an acid addition salt thereof, in combination with a carrier suitable for ophthalmic preparations, said carbostyril derivative being represented by the formula:



wherein R^1 and R^2 are each lower alkyl, and the carbon-to-carbon bond between the 3-position and the 4-position of the carbostyril skeleton is a single or double bond.

4,322,426

17-SUBSTITUTED-6-DESOXY-7,8-DIHYDRO-6α-METHYLNOROXYMORPHONE NARCOTIC ANTAGONISTS

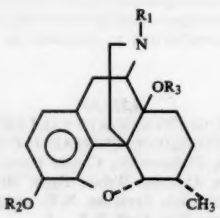
Edward C. Hermann, Newark; Kyu T. Lee, and Melvyn J. Myers, both of Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 28, 1980, Ser. No. 144,542

Int. Cl.³ A61K *31/485;* C07D *489/08*

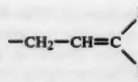
U.S. Cl. 424—260 8 Claims

1. A compound of the formula

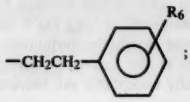


wherein

R_1 is selected from C_3–C_7 alkyl,



propargyl, C_3–C_6 cycloalkylmethyl, tetrahydrofurylmethyl, furylmethyl, thienylmethyl, and



R_2 is selected from —H, methyl and C_2–C_4 acyl;

R_3 is selected from —H and C_2–C_4 acyl;

R_4, R_5 and R_6 are independently —H or CH_3;

and pharmaceutically suitable acid addition salts thereof.

7. A composition useful for antagonizing the effects of opioid analgesics in mammals comprising a pharmaceutically suitable carrier and an antagonistically effective amount of a compound of any of claims 1–6.

8. A method for antagonizing the effects of opioid analgesics in mammals comprising administering to the mammal an antagonistically effective amount of a compound of any of claims 1–6.

4,322,427

ANALGETIC COMPOSITIONS AND METHODS OF USE

Joseph P. Buyniski, Syracuse, and Anthony W. Pircio, Manlius, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Apr. 16, 1981, Ser. No. 254,821

Int. Cl.³ A61K *31/40, 31/485*

U.S. Cl. 424—260 13 Claims

1. An analgetic composition consisting essentially of (a) butorphanol or a nontoxic pharmaceutically acceptable acid addition salt thereof and (b) zomepirac or a nontoxic pharmaceutically acceptable salt thereof, wherein the weight ratio of (a) to (b) is from about 1:1 to about 1:100.

4,322,428

2(4-FLUOROPHENYL)-4,5,-BIS(4-METHOXYPHENYL)-THIAZOLE AND METHOD OF USE

Ken Matsumoto, and Peter P. K. Ho, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 2, 1980, Ser. No. 136,591

Int. Cl.³ C07D *277/20*

U.S. Cl. 424—270 15 Claims

1. The compound 2-(4-fluorophenyl)-4,5-bis(4-methoxyphenyl)thiazole.

4,322,429

ISOXAZOLYLBENZAMIDES AS INSECTICIDES

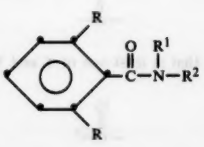
Kenneth W. Burow, Jr., Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 16, 1980, Ser. No. 187,677

Int. Cl.³ A01N *43/80;* C07D *261/14, 261/20*

U.S. Cl. 424—272 162 Claims

1. Compounds of the formula



wherein each R is selected from the group consisting of

H,

F,

Br,

Cl,

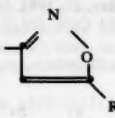
CH_3, or

OCH_3,

with the proviso that each R cannot simultaneously represent H;

R^1=H, C_1–C_3 alkyl, or 2,6-dichlorobenzoyl, subject to the proviso that when R^1=dichlorobenzoyl, both R groups simultaneously represent chloro;

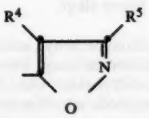
R^2=a 3-isoxazolyl of the formula



with the proviso that each R cannot simultaneously represent methyl or methoxy and subject to the further proviso that when one R represents methyl the other R cannot simultaneously represent methoxy, wherein

R^3=unsubstituted phenyl, 3,4-dihalophenyl, or a meta- or para-substituted phenyl of which the substituent is Br, Cl, F, I, C_1–C_3 alkyl, $O_mC_nF_{2n+1}$, $O_mC_nF_{2n}H$, ϕ, or -Oϕ, m=0-1 and n independently=1-2 with the proviso that when R^1 represents 2,6-dichlorobenzoyl, R^3 cannot represent unsubstituted phenyl, or meta- or para-(trifluoromethyl)phenyl; or

R^2=a 5-isoxazolyl of the formula



with the proviso that R^1=H, and subject to the further proviso that when one R represents CH_3 or OCH_3 the other R cannot simultaneously represent halo, wherein

R^4=H, or para-(trifluoromethyl)phenyl;

R^5=H, para-chlorophenyl, or an ortho- or meta-substituted phenyl of which the substitutent is Cl, CH_3, or CF_3 with the proviso that

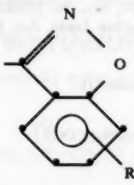
(a) when R^5 is para-chlorophenyl, neither R can represent H,

(b) when R^5 is meta-(trifluoromethyl)-phenyl, each R cannot simultaneously represent an OCH_3 moiety,

(c) R^4 and R^5 cannot simultaneously represent H,

(d) when R^4 represents para-(trifluoromethyl)phenyl, R^5 represents H; or

R^2=a 3-benzisoxazolyl of the formula



subject to the proviso that R^1=H, and subject to the further proviso that each R cannot simultaneously represent methyl or methoxy and when one R represents methyl the other R cannot simultaneously represent methoxy, wherein

R^6=halo, C_1–C_3 alkyl, $O_mC_nF_{2n+1}$, or $O_mC_nF_{2n}H$, m=0-1 and n independently=1-2;

or in the case of R^1=C_1-C_3 alkyl and each R simultaneously=chloro, the endo-alkylated and endo-acylated isoxazole tautomers thereof.

55. Method of suppressing insects of an order selected from the group consisting of Coleoptera, Diptera, Lepidoptera, and Orthoptera which comprises applying to the locus of the insects an effective amount of an active compound which is a compound of Claim 1.

4,322,430

AMINO-SUBSTITUTED 4,5,6,7-TETRAHYDRO-1H (OR 2H)-INDAZOLES

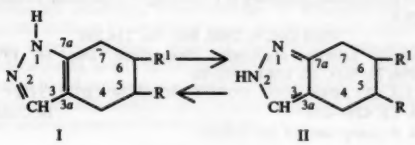
Nicholas J. Bach, and Edmumd C. Kornfeld, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 20,559, Mar. 15, 1979, Pat. No. 4,276,300, which is a continuation-in-part of Ser. No. 5,064, Jan. 22, 1979, abandoned. This application Feb. 19, 1981, Ser. No. 235,500

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 P **1 Claim**

1. A method of treating Parkinson's Syndrome which consists of administering to a human suffering from Parkinson's Syndrome and in need of treatment, a dose of a tautomer of the formula



I II

wherein one of R and R^1 is H and the other is $N(R^2)_2$ wherein each R^2 is individually H, allyl, methyl, ethyl or n-propyl and pharmaceutically-acceptable acid addition salts thereof formed with non-toxic acids, effective to alleviate some or all of the manifestations of Parkinson's Syndrome.

4,322,431

PHARMACEUTICAL PREPARATIONS CONTAINING BENZIMIDAZOLE 2-DERIVATIVES

Ernst Habicht, Oberwil; Pier G. Ferrini, Binningen, and Alfred Sallmann, Bottmingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

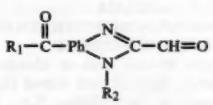
Filed Jan. 28, 1980, Ser. No. 116,138

Claims priority, application Switzerland, Feb. 9, 1979, 1291/79

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 B **9 Claims**

1. An antiallergical pharmaceutical preparation containing an effective amount of a compound of the formula



(I)

in which

R_1 represents lower alkyl having up to and including 7 carbon atoms; lower alkoxy-lower alkyl, lower alkylthio-lower alkyl, lower alkylsulphinyl-lower alkyl or lower alkylsulphonyl-lower alkyl, in which the individual lower alkyl radicals contain up to and including 4 carbon atoms; phenylthio-lower alkyl, phenylsulphinyl-lower alkyl or phenylsulphonyl-lower alkyl in which the lower alkyl radical contains up to and including 4 carbon atoms; lower alkenyl having up to and including 5 carbon atoms; cycloalkyl having up to and including 7 carbon atoms; phenyl or phenyl-lower alkyl having up to and including 4 carbon atoms in the lower alkyl radical and both optionally substituted by lower alkyl having up to and including 4 carbon atoms, by lower alkoxy having up to and including 4

carbon atoms, and/or by halogen having an atomic number of up to and including 35;

R_2 represents hydrogen or lower alkyl having up to and including 4 carbon atoms, and

Ph represents 1,2-phenylene containing the radical of the formula R_1—C(=O)— and optionally substituted by lower alkyl having up to and including 4 carbon atoms, by lower alkoxy having up to and including 4 carbon atoms, hydroxy and/or by halogen having an atomic number of up to and including 35, together with customary pharmaceutical auxiliaries and carriers.

4,322,432
CYCLOPROPANECARBOXYLIC ACID ALKYNYL ESTERS, PROCESSES FOR PRODUCING THEM, AND THEIR USE AS PESTICIDES

Achim Roloff, Rheinfelden, and Saleem Farooq, Ettingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

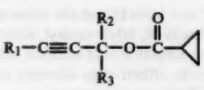
Filed Dec. 8, 1980, Ser. No. 214,296

Claims priority, application Switzerland, Dec. 14, 1979, 11094/79; Nov. 20, 1980, 8592/80

Int. Cl.³ A01N *43/02, 37/00;* **C07C** *69/74;* **C07D** *333/24*

U.S. Cl. 424—275 **10 Claims**

1. A compound of the formula



wherein

R_1 is phenyl optionally substituted by one or more members selected from the group consisting of halogen, C_1–C_5 alkyl, C_1–C_5 alkoxy, benzyl, trifluoromethyl, hydroxyl, nitro, cyano, formyl, acetyl and C_1–C_5 alkoxycarbonyl, or thienyl,

R^2 is hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, or phenyl or naphthyl optionally substituted by C_1 or C_2 alkyl, C_1 or C_2 alkoxy or halogen, and

R_3 is hydrogen, C_1–C_6 alkyl a C_2–C_6 alkenyl.

4,322,433
PERCUTANEOUS ADMINISTRATION OF NITROGLYCERINE

Stewart T. Leslie; Alan Rhodes, both of Aberdeen, Scotland; Cyril Boroda, London, England, and Alfred Halpern, Great Neck, N.Y., assignors to Euroceltique, S.A., Luxembourg, Luxembourg

Filed Nov. 3, 1980, Ser. No. 203,481

Claims priority, application United Kingdom, Nov. 6, 1979, 38380/79

Int. Cl.³ A61K *31/21*

U.S. Cl. 424—298 **13 Claims**

1. Composition for the percutaneous administration of nitroglycerine, said composition comprising a physiologically compatible biphasic lipophilic/hydrophilic carrier having a hydrophilic/lipophilic balance value of 8–14 and having distributed therein nitroglycerine for percutaneous administration by topical application in an antianginally effective amount, and also having distributed therein to promote the percutaneous absorption of said nitroglycerine upon topical application of said composition an additional amount of at least 0.05% by weight of nitroglycerine.

4,322,434
N-SUBSTITUTED-4-(POLYFLUORO-2-HYDROXY-2-PROPYL)ANILINES AND COMPOUNDS RELATED THERETO

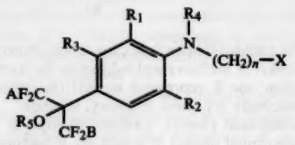
Bernard R. Neustadt, and Elijah H. Gold, both of West Orange, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 35,962, May 4, 1979, Pat. No. 4,267,193. This application Jan. 22, 1981, Ser. No. 227,297

Int. Cl.³ A01N *37/34;* **C07C** *101/72, 103/29, 121/80*

U.S. Cl. 424—304 **11 Claims**

1. A compound of the formula



wherein

A and B are independently hydrogen, chloro or fluoro;

R_1 is hydrogen, halo, lower alkyl or lower alkoxy;

R_2 is halo, lower alkyl or lower alkoxy;

R_3 is hydrogen or lower alkyl;

R_4 is hydrogen or lower alkyl;

R_5 is hydrogen or lower alkyl;

n is 1–3; and

X is cyano, lower alkoxycarbonyl, aminocarbonyl, or mono- or di-loweralkylaminocarbonyl when n is 1–3, or amino, mono- or di-loweralkylamino when n is 2–3; and the pharmaceutically acceptable salts thereof.

10. A method of treating hypertension which comprises administering to a hypertensive mammal an antihypertensive amount of a compound of claim 1.

4,322,435
PROSTACYCLIN COMPOUNDS

Koichi Kojima; Kiyoshi Sakai, and Shinsaku Kobayashi, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

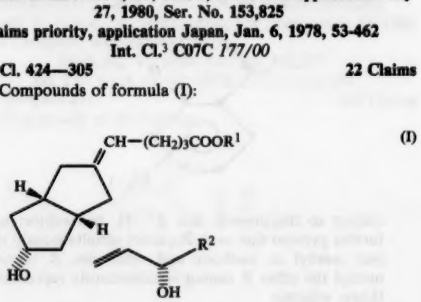
Division of Ser. No. 1,418, Jan. 8, 1979. This application May 27, 1980, Ser. No. 153,825

Claims priority, application Japan, Jan. 6, 1978, 53-462

Int. Cl.³ C07C *177/00*

U.S. Cl. 424—305 **22 Claims**

1. Compounds of formula (I):



(I)

wherein:

R^1 represents a hydrogen atom or an alkyl group having from 1 to 15 carbon atoms;

R^2 represents a 6-methyl-5-heptenyl group of a 2,6-dimethyl-5-heptenyl group;

and pharmaceutically acceptable salts thereof.

4,322,436

NOVEL SUBSTITUTED PHENYLACETIC ACID AMIDE COMPOUNDS

Alfred Sallmann, Bottmingen, and Gerhard Baschang, Bettingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

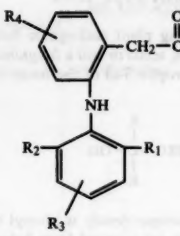
Division of Ser. No. 33,295, Apr. 25, 1979, Pat. No. 4,250,195, which is a continuation of Ser. No. 905,087, May 11, 1978, abandoned, Ser. No. 906,292, May 15, 1978, abandoned. This application Dec. 17, 1980, Ser. No. 217,367

Claims priority, application Luxembourg, May 11, 1977, 77316

Int. Cl.[3] C07C *129/08*; A61K *31/215, 31/195*; C07C *101/44*

U.S. Cl. 424—309 10 Claims

1. A compound of the formula



in which each of R_1 and R_2 is hydrogen, lower alkyl, lower alkoxy, halogen having an atomic number of not more than 35 or trifluoromethyl, each of R_3 and R_4 is hydrogen, lower alkyl, lower alkoxy or halogen having an atomic number of not more than 35, R_5 is lower alkylene or lower alkylidene, R_6 is amino or guanidino, R_7 is hydrogen and R_8 is hydroxy or lower alkoxy, or a therapeutically acceptable salt thereof.

10. A pharmaceutical preparation containing an antiinflammatory effective amount of a compound as claimed in claim 1 together with conventional pharmaceutical excipients.

4,322,437

SPIRO SUBSTITUTED INDANONES AND TETRALONES

Richard Berthold, Bottmingen, and Trevor G. Payne, Arlesheim, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

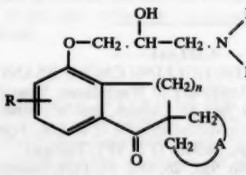
Filed May 10, 1977, Ser. No. 795,439

Claims priority, application Switzerland, May 14, 1976, 6063/76

Int. Cl.[3] A01N *37/30, 33/02*; C07C *93/06*

U.S. Cl. 424—316 22 Claims

1. A racemic or optically active compound of formula I,



I

wherein

A is straight chain alkylene of 2 to 5 carbon atoms, or straight chain alkenylene of 2 to 4 carbon atoms,

n is 1, 2 or 3,

R is hydrogen or halogen of atomic number from 9 to 35, and

R_1 is a group of formula II,

II

wherein

R_2 and R_3, independently, are hydrogen or alkyl of 1 to 4 carbon atoms, and

R_4 is alkyl of 1 to 4 carbon atoms, alkoxyalkyl of 2 to 5 carbon atoms, alkylthioalkyl of 2 to 5 carbon atoms, phenylalkyl or phenoxyalkyl or phenylthioalkyl, wherein the alkyl moiety has from 1 to 3 carbon atoms, or phenyl, the phenyl ring of each of the last four radicals being unsubstituted or mono-substituted by, or disubstituted independently by, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, hydroxy or halogen of atomic number from 9 to 35, and

R_5 is hydrogen,

or a pharmaceutically acceptable acid addition salt thereof.

8. A method of treating a coronary disease selected from myocardial infarction, hyperlipidemia or hyperglycemia or appetite induced by emotional stress, angina pectoris, hyperkinetic heart syndromes, muscular hypertrophic subvalvular aortic stenosis, heart rhythm disorders, hypertension, and high arterial blood pressure, in an animal, comprising administering a therapeutically effective amount of a compound of claim 1 to said animal in need of such treatment.

4,322,438

METHOD FOR THE USE OF ORALLY ADMINISTERED 13-CIS-RETINOIC ACID IN THE TREATMENT OF ACNE

Gary L. Peck, Silver Spring, Md., assignor to United States of America, Washington, D.C.

Continuation-in-part of Ser. No. 63,770, Aug. 6, 1979, abandoned. This application Aug. 5, 1980, Ser. No. 175,594

Int. Cl.[3] A61K *31/20*

U.S. Cl. 424—318 8 Claims

1. In a method of alleviating nodulocystic and conglobate acne in humans by the oral administration of 13-cis-retinoic acid, the improvement comprising:

(a) administering 13-cis-retinoic acid in a high dosage of from about 1.0 to about 2.0 milligrams per kilogram of body weight daily for a first period of from about 2 to about 4 weeks; and

(b) reducing the amount of 13-cis-retinoic acid to a low dosage of from about 0.25 to about 0.5 milligrams per kilogram of body weight daily for a second period of from about 12 to about 14 weeks, for those patients whose acne has not been substantially improved at the end of the first period as measured by the percentage reduction in cysts, so that the total treatment period is about 16 weeks.

4,322,439

ω-[2-(N-LOWER ALKYL-BENZAMIDO)-PHENYL]-ALKANOIC ACIDS, THEIR USE, AND MEDICAMENTS CONTAINING THEM

Kurt Klemm, Allensbach; Uwe Krüger, Constance; Erich Rapp, Radolfzell; Horst Wolf, Constance, and Ekkehard Kraas, Allensbach, all of Fed. Rep. of Germany, assignors to BYK Gulden Lomberg Chemische Fabrik GmbH, Constance, Fed. Rep. of Germany

PCT No. PCT/EP79/00006, § 371 Date Sep. 21, 1979, § 102(e) Date Sep. 21, 1979, PCT Pub. No. WO79/00586, PCT Pub. Date Aug. 23, 1979

PCT Filed Feb. 2, 1979, Ser. No. 170,666

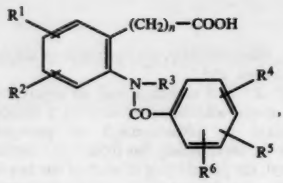
Claims priority, application Luxembourg, Feb. 3, 1978, 79008

Int. Cl.[3] C07C *101/47*; A61K *31/195*

U.S. Cl. 424—319 14 Claims

1. A method of treating a patient afflicted with or subject to a glucose-metabolism disturbance which comprises administering to the patient an effective amount of a medicament prepara-

tion having a physiologically-active ingredient and pharmacologically-compatible excipient, the physiologically-active ingredient being an ω-[2-{-N-lower alkyl)benzamide}phenyl]-alkanoic acid of the formula



(I)

wherein

n denotes a positive whole number from 2 to 5,

R^1 denotes a hydrogen atom, halo, lower alkyl, lower alkoxy, lower alkylmercapto, trifluoromethyl or optionally-(halo- or lower-alkoxy-)substituted phenyl,

R^2 denotes a hydrogen atom, halo, lower alkyl or lower alkoxy,

R^3 denotes lower alkyl,

R^4 denotes a hydrogen atom, halo, hydroxyl, lower alkyl, lower alkoxy, lower alkylmercapto, optionally-(halo- or nitro-)substituted phenyl, nitro, optionally-(lower alkylated) amino, lower alkylcarbonyl, optionally-halosubstituted benzoyl, trifluoromethyl, trifluoromethoxy or trifluoromethylmercapto,

R^5 denotes a hydrogen atom, halo, lower alkyl or lower alkoxy,

R^6 denotes a hydrogen atom, lower alkyl or lower alkoxy, or a pharmacologically-acceptable salt thereof.

4,322,440

ANTICONVULSIVE COMPOSITIONS AND METHOD OF TREATING CONVULSIVE DISORDERS

Irving Fish, Tenafly, N.J.; Stephen A. Schwartz, Bronx, and Stanley Samuels, White Plains, both of N.Y., assignors to New York University, New York, N.Y.

Filed Jun. 25, 1980, Ser. No. 162,907

Int. Cl.³ A61K *31/195*

U.S. Cl. 424—319 **36 Claims**

27. A method for controlling seizures in a mammal in need of such treatment which comprises orally administering to said mammal at least 30 minutes prior to the onset of said seizures a pharmaceutical formulation containing an effective amount for controlling seizures of delta-amino levulinic acid, said formulation having a pH in the range of between about pH 4.0 to about pH 6.8.

4,322,441

USE OF FLUORINATED BETA-DIKETONES AS BACTERIOCIDES AND FUNGICIDES

Michael R. Engel, White Bear Lake, and Jill P. Stiller, Brooklyn Park, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 84,990, Oct. 15, 1979, abandoned. This application May 1, 1981, Ser. No. 259,702

Int. Cl.³ A01N *35/00*

U.S. Cl. 424—331 **14 Claims**

1. The process of inhibiting the growth of bacteria on the animal body, other than the oral cavity, and on inanimate surfaces which comprises providing in the environment of said bacteria a growth inhibiting amount of a beta-diketone compound represented by the formula

$$Y—CO—CH_2—CO—R_f$$

wherein Y is an alkyl group having 5 to 20 carbon atoms, an alkenyl group having 5 to 20 carbon atoms, a halogen-substituted alkyl group having 5 to 20 carbon atoms, a halogen-substituted alkenyl group having 5 to 20 carbon atoms, a phenyl or naphthyl group or their halogen-substituted derivatives, and R_f is a perfluoroalkyl group containing one to three carbon atoms.

4,322,442

COMBATING FUNGI WITH 1-HALO-1-PROPYN-3-OLS

Gerhard Jäger, Wuppertal; Erich Klauke, Odenthal; Wilhelm Brandes, Leichlingen, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

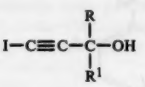
Continuation of Ser. No. 964,543, Nov. 29, 1978. This application Sep. 8, 1980, Ser. No. 184,694

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1977, 2756031

Int. Cl.³ A01N *31/14, 31/04*

U.S. Cl. 424—341 **5 Claims**

1. A method of combating plant pathogenic fungi which comprises applying to plants, seeds or soil a fungicidally effective amount of a 1-halo-1-propyn-3-ol of the formula



in which R and R^1 each independently is phenyl optionally carrying at least one substituent selected from halogen, alkyl with 1 to 4 carbon atoms, methoxy, ethoxy, haloalkyl, and haloalkoxy with 1 or 2 carbon atoms and up to 5 halogen atoms, nitro, and phenyl and phenoxy optionally substituted by halogen or alkyl with 1 or 2 carbon atoms; with the proviso that at least one of R and R^1 is substituted phenyl.

4,322,443

METHODS OF PRODUCING FODDER

Stanislaw Frontczak, Lodz, Poland, assignor to Jacek Dlugolecki, Gdansk, Poland, a part interest

Filed Feb. 21, 1980, Ser. No. 123,203

Claims priority, application United Kingdom, Jan. 26, 1980, 02710/80

Int. Cl.³ A23K *1/00, 1/14*

U.S. Cl. 426—28 **10 Claims**

1. A method of producing fodder, comprising the steps of

forming a layer of peat having a thickness in the range of about 75 to about 175 millimeters on a surface substantially impermeable to plant roots;

sowing into the layer of peat seeds of at least one quick germinating plant of a type such as to produce strong root systems at a rate of at least about 500 kilograms of seeds per hectare; and

vegetating the seeds for a period in the range of about 22 to about 40 days;

whereby the layer of peat with germinated seeds is usable as fodder.

4,322,444

METHOD FOR DE-HULLING CACAO BEANS

Dirk J. V. Zuilichem, University of Wageningen, Wageningen; Jan Veenendaal, P.O. Box 35, Lochem, both of Netherlands, and David Newton, c/o Micronizing Co. (UK) Ltd., Framlingham, near Woodbridge, Suffolk IP13 9PT, England

Continuation of Ser. No. 951,728, Oct. 16, 1978, abandoned. This application Feb. 7, 1980, Ser. No. 119,208

Claims priority, application United Kingdom, Oct. 21, 1977, 43956/77

Int. Cl.³ A21D *6/00*

U.S. Cl. 426—241 **16 Claims**

1. A method of de-hulling cacao beans comprising the steps of:

(a) establishing a field of infra-red radiation;

(b) non-abrasively loosening and entirely separating the hulls of said beans from the nibs without mechanically abrading or cracking the bean hulls by introducing said beans to said field of infra-red radiation for a period of between about one half and about two minutes; and,

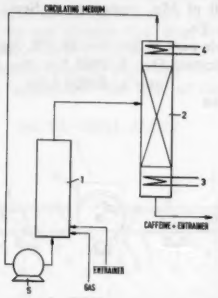
(c) removing said beans and separated hulls from said field of radiation and sorting the nibs of said beans from the separated hulls to recover the de-hulled beans for further handling.

4,322,445

PROCESS FOR DECAFFEINATING COFFEE

Siegfried Peter, Lange Zeile 138½, 8520 Erlangen, and Gerd Brunner, Weinweg 10, 8541 Eckersmühlen, both of Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 933,482
Int. Cl.³ A23F *5/20*
U.S. Cl. 426—312 **4 Claims**



1. A process for decaffeination of coffee and recovery of caffeine, comprising pretreating the raw coffee with steam until its moisture content is from 15 to 55 percent by weight of the raw coffee, exposing the raw coffee thus pretreated to a circulating medium essentially composed of a compressed gas selected from the group consisting of nitrogen, carbon dioxide, nitrous oxide, ethane, ethylene, methane, propane, propylene and monochlorotrifluoromethane, and an entrainer for extraction of caffeine selected from the group consisting of chlorinated alkanes having from 1 to 2 carbon atoms and from 1 to 4 chlorine atoms, esters of an aliphatic acid having from 2 to 4 carbon atoms with an aliphatic alcohol having from 1 to 3 carbon atoms, esters of an aliphatic dicarboxylic acid having from 3 to 4 carbon atoms, esters of aceto-acetic acid, ketones having from 3 to 6 carbon atoms, aliphatic alcohols having up to 3 carbon atoms, and formaldehyde dimethylacetal, subjecting said circulating medium to partial condensation of the caffeine containing entrainer, in the absence of decompression, recovering caffeine from the condensate by evaporation of the entrainer contained therein, and recycling the circulating medium to the raw coffee for continued extraction of caffeine therefrom.

4,322,446

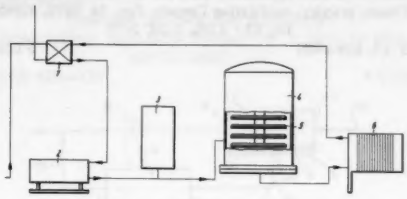
METHOD AND APPARATUS FOR STABILIZING WINE OR OTHER BEVERAGES

Emil Heess, Remshalden-Grunbach; Norbert Hums, Waldstetten, and Kurt Krug, Göggingen, all of Fed. Rep. of Germany, assignors to Schenk-Filterbau Gesellschaft mit beschränkter Haftung, Waldstetten, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,535
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947200
Int. Cl.³ C12G *1/00*
U.S. Cl. 426—330.4 **12 Claims**

1. A method of stabilizing already shiny-bright filtrated clear wine and other beverages containing tartaric acid or potassium hydrogen tartrate dissolved therein, which under certain conditions can become cloudy in the presence of potassium and/or calcium ions, said method comprising in combination the steps of:

first lowering the temperature of said beverage to cool-off the beverage;



then providing a deposit layer containing crystals selected from the group consisting of wine lees and calcium crystals; and

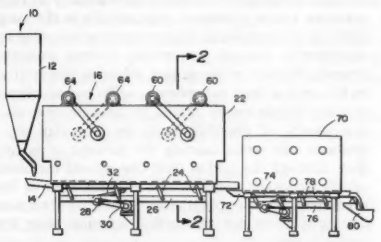
finally passing said cooled-off beverage and filtrating the beverage solely through said deposit layer for time measured in seconds to separate out therefrom dissolved wine lees held by said deposit layer without attaining any immediate crystalization on the deposit layer.

4,322,447

HIGH SPEED PROCESS FOR ROASTING COFFEE

Merton R. Hubbard, Hillsborough, Calif., assignor to Hills Bros. Coffee, Inc., San Francisco, Calif.

Filed Sep. 29, 1980, Ser. No. 191,696
Int. Cl.³ A23F *5/04*
U.S. Cl. 426—467 **6 Claims**



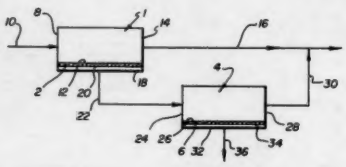
1. A continuous high speed process for dry roasting green coffee beans comprising the steps of progressively and continuously moving and agitating dry green coffee beans in a fluidized bed successively through first and second separate roasting chambers, said bed depth in both chambers being maintained below about one inch, the beans being uniformly contacted in the first chamber with a dry roasting gas stream which fluidizes said beans, said gas being at a temperature from about 550° F. to 570° F., and the gas effecting at least a partial roasting of the beans and expansion of the cellular structure of the beans, then passing the beans through a second chamber in which the beans are uniformly contacted with an independent dry roasting gas stream, which fluidizes said beans to complete the roasting process, said independent gas stream being at substantially the same temperature as the gas stream in the first chamber, and then cooling the beans to form a low density roasted coffee product having a yield of high soluble solids.

4,322,448

METHOD OF CONCENTRATING NATURAL FRUIT JUICES BY REVERSE OSMOSIS

Takeshi Matsuura; Pierre Blais; Arthur G. Baxter, and Srinivasa Sourirajan, all of Ottawa, Canada, assignors to Canadian Patents & Dev. Ltd., Ottawa, Canada

Continuation-in-part of Ser. No. 37,179, May 8, 1979, abandoned. This application Jan. 23, 1980, Ser. No. 114,700
Claims priority, application Canada, Jun. 14, 1978, 305469
Int. Cl.³ A23L 2/08, 2/28
U.S. Cl. 426—490 5 Claims



1. A method of concentrating natural fruit juices by reverse osmosis, comprising:

(a) in a first stage, passing a stream of the fruit juice substantially at room temperature and at a pressure in the range 500 to 1500 psi to a relatively higher pressure side of at least one porous, cellulose acetate, reverse osmosis membrane to retain, by reverse osmosis, a major portion of sugars of the fruit juice in the form of a syrup on the relatively higher pressure side, while causing the passage of separated water of the fruit juice containing flavor compounds of the fruit juice, through the said at least one membrane to a relatively lower pressure side thereof, said at least one cellulose acetate, reverse osmosis membrane having values for the solubility parameter due to hydrogen bonding (δ_h) and the solubility parameter due to dispersion (δ_d) of the orders of 6.33 cal$^{\frac{1}{2}}$ cm$^{-3/2}$ and 7.60 cal$^{\frac{1}{2}}$ cm $^{-3/2}$ respectively, and

(b) in a second stage, passing a stream of the said separated water in liquid form, at a temperature in the range 0° C. to the said temperature which is substantially at room temperature, and at a pressure substantially in the range 50 to 1000 psi, to a relatively higher pressure side of at least one asymmetric, porous, polymeric, reverse osmosis membrane in the path of the stream, which is non-polar relative to the said at least one porous, cellulose acetate, reverse osmosis membrane to retain, by reverse osmosis, flavor compounds of the fruit juice on the relatively higher pressure side while causing the passage of water therefrom through the said at least one second membrane to a relatively lower pressure side thereof, said at least one asymmeric, porous, polymeric, reverse osmosis membrane having a value for the said δ_d greater than 7.60 cal$^{\frac{1}{2}}$ cm$^{-3/2}$, and

(c) collecting the retained sugars and flavor compounds of the fruit juice.

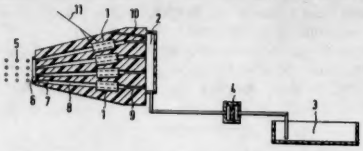
4,322,449

PHARMACEUTICALS HAVING DOTTED ACTIVE INGREDIENTS AND A METHOD AND APPARATUS FOR THE PREPARATION THEREOF

Gunther Voss, Diessen, and Peter Gruber, Biberach, both of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 94,238, Nov. 14, 1979, abandoned. This application Jan. 3, 1980, Ser. No. 109,420
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2849494
Int. Cl.³ A61K 9/00
U.S. Cl. 427—3 9 Claims

1. A method for the preparation of solid pharmaceuticals, which comprises dotting liquid, dissolved or suspended active substance in a specific quantity in the form of discrete droplets of specific volume onto a pharmaceutical carrier granulate in a



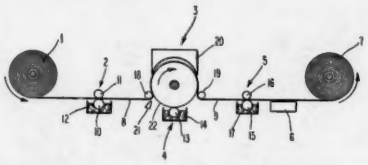
mold before the pharmaceutical carrier granulate is pressed into tablets or cores.

4,322,450

SURFACE REPLICATION ON A COATED SUBSTRATE

Lorin S. Gray, III, Portland; John A. Mattor, Bar Mills; Ben Millard, South Windham, and Franklin J. Ward, Cape Elizabeth, all of Me., assignors to Scott Paper Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 78,078, Sep. 24, 1979. This application Oct. 2, 1980, Ser. No. 193,068
Int. Cl.³ B05D 3/06
U.S. Cl. 427—44 12 Claims



1. A method of providing surface replication in a release coating on a substrate, comprising the steps of:

A. applying a coating of an electron beam radiation curable composition or material directly to one side of a web of base coated paper;

B. pressing the coated side of the substrate against a replicative surface having a desired surface effect to cause the surface of the coating to conform to the replicative surface;

C. irradiating the coating with electron beam radiation through the substrate to cure the coating at least sufficiently to enable it to be removed from the replicative surface securely attached to the substrate and with the replicated surface effect in the coating being maintained, the irradiation step taking place after sufficient time has passed to cause the coating to penetrate into the coated paper and to be in continuous intimate contact with the coated paper; and

D. stripping the substrate from the replicative surface with the at least partially cured coating adhered to the substrate.

4,322,451

METHOD OF FORMING A COLLOIDAL WETTING SENSITIZER

John A. Emerson, Alexandria Township, Hunterdon County, and Wesley P. Townsend, Princeton Township, Mercer County, both of N.J., assignors to Western Electric Co., Inc., New York, N.Y.

Continuation-in-part of Ser. No. 901,667, May 1, 1978, abandoned. This application Sep. 14, 1979, Ser. No. 75,454
Int. Cl.³ C23C 3/02
U.S. Cl. 427—53.1 10 Claims

1. A method of depositing a metal on a hydrophobic dielectric surface, which comprises:

(a) sensitizing the surface with a colloidal tin-cuprous wet-

ting sensitizer comprising a reaction product of a soluble stannous species and a soluble cupric species in an acidified aqueous medium maintained at a pH of from 0.4 to 1.5, prepared by adding the cupric species to the acidified stannous species and wherein the molar ratio of Sn^{+2}/Cu^{+2} is from 0.5:1 to 5:1, the concentration of stannous species is 0.4–5 weight percent, the anionic portion of said species and acidifier being the same and a photosensitive material; and

(b) treating said sensitized surface with radiant energy to reduce said reaction product to form a surface capable of catalyzing the deposition thereon of a metal from an electroless metal deposition solution.

4,322,452

PROCESS FOR PASSIVATING SEMICONDUCTOR MEMBERS

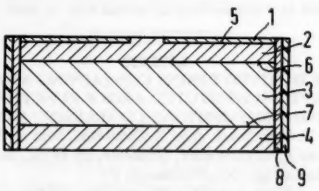
Jürgen Krausse, Baldham, and Wilhelm Ladenhauf, Puchheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 917,475, Jun. 21, 1978, abandoned. This application Aug. 18, 1980, Ser. No. 178,750

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1977, 2730367

Int. Cl.³ H01L *21/314*

U.S. Cl. 427—82 **4 Claims**



1. In a process for the passivation of semiconductor devices by the application of a silicon layer, the improvement comprising applying energy to a body of silicon maintained under a vacuum to generate silicon vapors by evaporation from the body of silicon, depositing the evaporated silicon vapors as a layer of silicon on the semiconductor device and thereafter tempering the deposited layer of silicon at temperatures above room temperature to below the crystallization temperature of the vapor deposited silicon for a period of time of at least three hours.

4,322,453

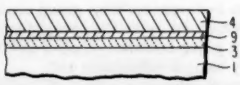
CONDUCTIVITY WSi_2 (TUNGSTEN SILICIDE) FILMS BY PT PREANNEAL LAYERING

Robert J. Miller, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,170

Int. Cl.³ H01L *21/24, 21/285*

U.S. Cl. 427—89 **18 Claims**



1. A method of improving the conductivity of a microelectronic conductive tungsten silicide film comprising the steps of; depositing a layer of tungsten silicide on a substrate, depositing a layer of platinum on the tungsten silicide layer, and annealing to diffuse platinum atoms throughout the tungsten silicide.

4,322,454

PROCESS FOR REGULATING TO DESIRED VALUES THE DIMENSIONS OF THE BUBBLES OF MAGNETIC BUBBLE ELEMENTS

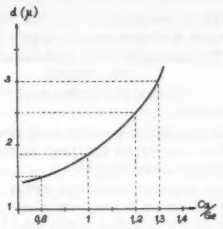
Didier Challeton, St. Egreve; Jacques Daval, Meylan; Bernard Ferrand, Voreppe, and Hubert Moriceau, St. Martin d'Heres, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 24, 1980, Ser. No. 190,389

Claims priority, application France, Oct. 3, 1979, 79 2463

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—128 **8 Claims**



1. A process for regulating to desired values the size of the bubbles of magnetic bubble elements during the manufacture of such elements by liquid phase deposition into a non-magnetic substrate of a ferrimagnetic garnet film of formula:

$$(T_a^1T_b^2T_c^3ca_d)(Fe_eGe_g)O_{12}$$

in which T^1, T^2 and T^3, which differ from one another, represent an element in the series of rare earths, including yttrium, a, b, c and d are numbers such that their sum is substantially equal to 3 and e and f are numbers such that their sum is substantially equal to 5, wherein such elements are produced by using epitaxy baths comprising calcium oxide or carbonate and predetermined quantities of ferric oxide, oxides of elements T^1, T^2 and T^3 and germanium oxide, wherein calcium carbonate or oxide quantity of each epitaxy bath is regulated as a function of the size of the bubbles which it is desired to obtain in the element produced from said bath and wherein the deposition of said element takes place at a temperature T_d selected as a function of the saturation temperature T_s of the bath to obtain a growth velocity adapted to the size of the bubbles which it is desired to obtain, the deposit being made during a time t such that the element obtained has a thickness similar to that of the bubbles obtained.

4,322,455

PROCESS FOR PRODUCING AN ULTRAVIOLET RADIATION STABILIZED POLYMERIC ARTICLE

Daniel R. Olson, and Ta Y. Ching, both of Schenectady, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Sep. 15, 1980, Ser. No. 187,507

Int. Cl.³ B05D *7/02, 3/02, 7/24*

U.S. Cl. 427—160 **9 Claims**

1. A process for producing a polycarbonate resin article having an improved resistance to degradation by ultraviolet radiation comprising impregnating the surface layers of said polycarbonate resin article with at least one ultraviolet radiation absorber by first preheating said article and thereafter contacting the surface of said preheated article with an ultraviolet radiation stabilizing composition consisting essentially of (i) at least one ultraviolet radiation absorber, and (ii) at least one liquid carrier which is nonaggressive towards and wets polycarbonate resin selected from the class consisting of alcohols, hydroxy ethers, alcohol-water mixtures, liquid aliphatic hydrocarbons, liquid cycloaliphatic hydrocarbons, and chlorofluorocarbons; said polycarbonate resin article having been preheated before being contacted with said stabilizing compo-

sition to a temperature sufficient for said ultraviolet radiation absorber to effectively impregnate the surface layers of said polycarbonate resin article when said surface of said article is in contact with said stabilizing composition but insufficient to deleteriously affect the properties of said polycarbonate resin.

4,322,456

PROCESS FOR COATING SUBSTRATES WITH HIGH MOLECULAR WEIGHT EPOXY RESINS

Patrick H. Martin, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 9,015, Feb. 5, 1979, abandoned, which is a continuation of Ser. No. 677,356, Apr. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 449,410, Mar. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 234,390, Mar. 13, 1972, abandoned. This application Sep. 11, 1980, Ser. No. 186,092

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—195 **14 Claims**

1. A process for applying epoxy resin coatings to nonporous substrates which comprises applying, in powder form, to said substrate a mixture consisting of

(A) an epoxy resin or mixture of epoxy resins having more than one 1,2-epoxy group, said epoxy resin being a glycidyl ether of a polyhydric compound containing aromatic or aliphatic hydroxyl groups;

(B) a non-heat reactive compound or mixture of such compounds having more than one phenolic hydroxyl group;

(C) a catalyst for effecting the reaction between (A) and (B); and

(D) optionally, one or more of the members selected from the group consisting of pigments, fillers, dyes and flow control agents;

subjecting the coated substrate to a temperature of at least about 120° C. for a time sufficient to provide a cured coated and wherein the quantities of (A) and (B) are such so as to provide a coating having a molecular weight of at least about 15,000.

4,322,457

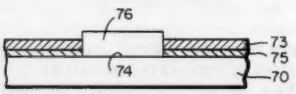
METHOD OF SELECTIVELY DEPOSITING A METAL ON A SURFACE

William J. Baron, Franklin Township, Somerset County; John T. Kenney, Lawrence Township, Mercer County, and Wesley P. Townsend, Princeton Township, Mercer County, all of N.J., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Jan. 25, 1978, Ser. No. 872,194

Int. Cl.³ C23C *3/02*

U.S. Cl. 427—259 **17 Claims**



1. A method of selectively depositing a species on a dielectric surface which comprises:

selectively coating a portion of the surface with a surface active agent having a first surface energy of less than 60 dynes per centimeter measured at 25° C. to form a coated surface having a coated portion capable of migrating to cause burying of a higher surface energy material applied thereto and an uncoated portion not so capable;

treating said selectively coated surface with a solution or a sol, having a second surface energy greater than said first surface energy, comprising a species selected from the group consisting of (a) a sensitizing species capable of reducing an activating metal ion to an activating metal and (b) an activating species capable of participating in an electroless metal deposition; and

allowing sufficient time for said sol to penetrate and become buried by said surface active agent in the areas where said surface active agent has been coated on said surface and wherein only said sol is on said surface in areas not coated by said surface active agent.

4,322,458

MOLDED CERAMIC MEMBER, PARTICULARLY OF SILICON CERAMIC, AND METHOD FOR THE MANUFACTURE THEREOF

Wilhelm Siebmanns, Dachau, Fed. Rep. of Germany, assignor to Motoren-und Turbinen Union, Munich, Fed. Rep. of Germany

Filed Aug. 4, 1978, Ser. No. 930,987

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737227

Int. Cl.³ B05D *1/40, 3/00*

U.S. Cl. 427—331 **9 Claims**

1. Method for preparing a porous molded member formed of a silicon ceramic material for hot isostatic pressing by encapsulating it with a coating constructed of a material having the composition $Ag_2O.$ (refractory metal. O_x) or mixtures of such materials corresponding to the composition $Ag_2O.$ (refractory metals. O_x), comprising the steps of:

(a) forming a slurry of fine silver powder and of oxides of refractory metals selected from the group consisting of tungsten, molybdenum and tantalum;

(b) depositing said slurry on said molded member; and

(c) annealing said slurry-coated molded member in atmosphere at a temperature of within 900° to 1400° C.

4,322,459

EPOXY DERIVED RESINS CONTAINING AMINO OR MERCAPTO SUBSTITUTED AZOLE FUNCTIONALITY AND COMPOSITIONS CONTAINING SAME

Nicholas T. Castellucci; John S. Ostrowski, both of Pittsburgh, and John F. Grunewalder, Glenshaw, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

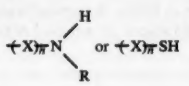
Filed Nov. 21, 1980, Ser. No. 208,973

Int. Cl.³ C08G *59/50*

U.S. Cl. 428—386 **31 Claims**

1. A curable resin comprising: the reaction product of

(A) a N-heterocyclic compound selected from the group consisting of a triazole, a tetrazole and a mixture thereof, said N-heterocyclic compound substituted on at least one carbon atom in the N-heterocyclic ring by a group of the formula



wherein

X represents an alkylene group containing from 1 to 6 carbon atoms optionally halogen substituted, a cycloalkylene group containing from 5 to 8 carbon atoms optionally halogen substituted, or a phenylene group optionally substituted by halogen and/or an alkyl group containing from 1 to 6 carbon atoms,

n represents 0 or 1, and

R represents hydrogen, an alkyl group containing from 1 to 6 carbon atoms optionally halogen substituted, or a cycloalkyl group containing from 5 to 8 carbon atoms optionally halogen substituted; and

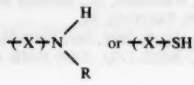
(B) a polyepoxide wherein the ratio of equivalents of said N-heterocyclic compound to said polyepoxide is from about 0.5:1.0 to about 1.5:1.0.

27. A method of coating a substrate comprising:

(A) applying to said substrate a composition comprising

(i) from about 15 percent to about 45 percent by weight of the reaction product of a N-heterocyclic compound selected from the group consisting of a triazole, a tet-

razole and a mixture thereof, said N-heterocyclic compound substituted on at least one carbon atom in the N-heterocyclic ring by a group of the formula



wherein

X represents an alkylene group containing from 1 to 6 carbon atoms optionally halogen substituted, a cycloalkylene group containing from 5 to 8 carbon atoms optionally halogen substituted, or a phenylene group optionally substituted by halogen and/or an alkyl group containing from 1 to 6 carbon atoms,

n represents 0 or 1, and

R represents hydrogen, an alkyl group containing from 1 to 6 carbon atoms optionally halogen substituted, or a cycloalkyl group containing from 5 to 8 carbon atoms optionally halogen substituted; and a polyepoxide wherein the ratio of equivalents of said N-heterocyclic compound to said polyepoxide is from about 0.5:1.0 to about 1.5:1.0.

(ii) from about 40 percent to about 8 percent by weight of a polyepoxide, and

(iii) the balance an organic solvent, provided the ratio of N-heterocyclic moieties in said reaction product to epoxy groups in said composition is equal to or greater than 0.6; and

(B) curing said composition.

4,322,460

SPRAYABLE POLYESTER COATING

Rodney R. Howe, Tacoma, and Quentin F. Ruonavaara, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 24, 1978, Ser. No. 899,231
Int. Cl.[3] B05D *1/02, 1/12*
U.S. Cl. 427—426 **12 Claims**

1. A method of forming an improved, nonporous, fast curing polyester resin surface coating on a surface of a porous substrate comprising the steps of:

creating a spray comprising a mixture of a first and second component, said first component comprising a polyester resin mixture, said second component comprising benzoyl peroxide dissolved in cyclohexanone,

directing said spray onto said surface to form a layer comprising a mixture of said first and second components; and,

thereafter curing said mixture of said first and said second components to form said coating without allowing said ketone to evaporate prior to curing.

4,322,461

ID CARD LAMINAR STRUCTURES AND A METHOD FOR PREPARATION THEREOF USING A TRANSFERED ADHESIVE

Thomas Raphael, Winchester, and Joseph Shulman, Hyde Park, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 7, 1980, Ser. No. 110,324
Int. Cl.[3] B32B *7/14;* **C09J** *7/02*
U.S. Cl. 428—14 **26 Claims**

1. A laminar structure comprising a carrier sheet material supporting on one surface thereof and peelably releasable therefrom a layer of an adhesive mixture consisting essentially of a vinyl acetate-ethylene copolymer and a hydroxylated polymer.

14. A laminar structure comprising a transparent layer of a polyvinyl chloride bonded to an adhesive layer consisting essentially of a mixture of a vinyl acetate-ethylene copolymer and a hydroxylated polymer in a weight ratio ranging from about 85/15 to about 95/5, said adhesive layer in turn bonded to the image-receiving layer of a color diffusion transfer photographic print.

22. A process for preparing an ID card laminar structure comprising:

applying to a moist image-receiving layer of a color diffusion transfer photographic print a layer of an adhesive mixture comprising a vinyl acetate-ethylene copolymer and a hydroxylated polymer supported on one surface of a carrier sheet;

allowing sufficient time for the moist adhesive-photographic print bond to dry and then peeling the carrier sheet from the adhesive mixture to leave an adhesive-coated photographic print structure; and

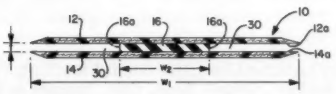
positioning a vinyl protective sheet over the adhesive coated print and heat sealing the vinyl sheet to said print structure to form a secure bond thereto.

4,322,462

SEAL SPLICE

George A. Lucas, Rockmart, Ga., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Division of Ser. No. 124,415, Feb. 25, 1980, Pat. No. 4,257,837.
This application Oct. 17, 1980, Ser. No. 197,860
Int. Cl.[3] B32B *3/12, 3/02*
U.S. Cl. 428—61 **6 Claims**



1. A splicing unit for connecting two ends of elongated seal material having lateral edges tapering to a wiper edge such as to form a unitary annular seal ring comprising:

a first fabric reinforced elastomeric ply strip having a central longitudinal axis and a length substantially greater than its width;

a second fabric reinforced elastomeric ply strip having a central longitudinal axis and a length substantially greater than its width juxtaposed to the first ply strip such that the longitudinal axes are aligned in a vertical plane; and

an unreinforced elastomeric gum interposed between the first and second ply strips for the length thereof and having a width less than the widths of the ply strips and centrally positioned between the ply strips along their longitudinal axes such as to form an H-section configuration having lengthwise slots on either side of the unit for receiving the ends of the seal material therein;

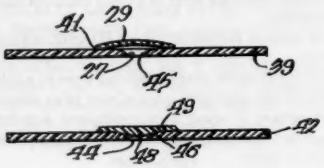
the fabric reinforced ply strips and interposed gum being vulcanized into an integral unit having a length equal to the width of the seal material to be spliced and tapered end portions conforming to the taper of the seal material such that a continuous tapered edge exists between the ends of the seal material when they are joined in the slots of the splicing unit.

4,322,463

CUSTOM VALVED CERVICAL CAP

Robert A. Goepp, Chicago, and Uwe E. Freese, Oak Park, both of Ill., assignors to University Patents, Inc., Norwalk, Conn.

Filed Dec. 31, 1979, Ser. No. 108,319
Int. Cl.³ B32B 3/10; A61F 5/46
U.S. Cl. 428—138 15 Claims



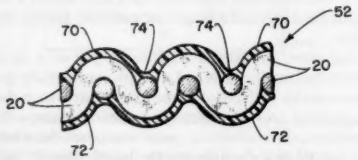
1. A blank for a removable cervical cap which comprises
a substantially planar sheet of a thermoplastic elastomeric material having a central aperture; and
an elastomeric web superposed over said aperture and secured to the planar sheet;
said elastomer web having a thickness less than the thickness of said sheet and being secured to said sheet about the major portion of the aperture periphery but providing a one-way passageway extending from said aperture and between the web and said sheet to a discharge port defined by the sheet and a free edge of the web and offset at least one aperture diameter away from said aperture.

4,322,464

FUSION LAMINATED HIGH-TEMPERATURE FABRIC

Don A. Beckley, Newport Beach, Calif., assignor to HITCO, Irvine, Calif.

Division of Ser. No. 739,039, Nov. 5, 1976, Pat. No. 4,119,481. This application May 24, 1978, Ser. No. 909,045
Int. Cl.³ B32B 3/30, 19/04
U.S. Cl. 428—175 7 Claims



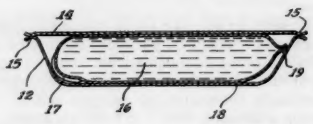
1. A coated, high-temperature, woven, refractory fabric having a high heat distortion temperature comprising:
a woven, inorganic fabric, the fibers of which comprise amorphous silica having a heat distortion temperature above the heat distortion temperature of the thermoplastic film and a thickness form 0.02 to 0.06 inches and having
at least one surface containing a continuous layer of thermoplastic film having a fusion temperature from 250° F. to 600° F. and a thickness from 0.5 to 3 mils pressure embossed directly into the fibers of the fabric encapsulating the outer surface of the fibers and weave intersections of the fabric.

4,322,465

CLEAR, AUTOCLAVABLE, SEALED CONTAINER HAVING GOOD WATER VAPOR BARRIER PROPERTIES AND FLEX CRACK RESISTANCE

R. Daniel Webster, Wauconda, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 8, 1980, Ser. No. 176,616
Int. Cl.³ B32B 3/02, 7/04; B65B 47/00
U.S. Cl. 428—194 25 Claims



1. A clear, autoclavable, flexible, sealed container having good water vapor barrier properties and flex crack resistance, said container being made of first and second plastic sheets sealed together at their peripheries, said first plastic sheet comprising a laminate of (1) at least one layer of a polyolefin derived principally from propylene, and being of semi-crystalline characteristic to exhibit a low permeability to water vapor, bonded to (2) a blended layer consisting essentially of 30 to 90 percent by weight of a block copolymer having thermoplastic, rubbery characteristics, and having rubbery polyolefin blocks consisting essentially of ethylene and butylene units, and blocks of a polystyrene; the rubbery polyolefin blocks comprising from 60 to 85 percent by weight of said block copolymer; and from 10 to 70 percent by weight of a polyolefin derived principally from at least one of propylene, ethylene, and 4-methylpentene-1, said polyolefin having a Vicat Softening Temperature of above 120° C.; said second plastic sheet comprising a bonded laminate comprising a layer of relatively nonoriented polypropylene and a layer of biaxially oriented polypropylene, said nonoriented polypropylene being peripherally bonded to said layer of polyolefin of the first plastic sheet.

4,322,466

SHEET PRINTED WITH INVISIBLE INKS

Roderick P. J. Tomlinson, Glen Waverley, Australia, assignor to Lockley Services Pty. Ltd.; Graham Charles Barry and Norman John Field, all of Victoria, Australia, a part interest

Filed Dec. 4, 1978, Ser. No. 965,874
Claims priority, application Australia, Dec. 2, 1977, PD2655; Dec. 2, 1977, PD2656
Int. Cl.³ B41M 5/12
U.S. Cl. 428—199 15 Claims

1. A developable surface comprising a carrier layer capable of accepting print and having printed thereon in a predetermined pattern a plurality of individual deposits of at least two different invisible inks in adjacent and intermingling relationship, said individual deposits in the developed state not being optically resolvable as different colors, and with said plurality of deposits being optically resolvable as a blended color of the said different inks.

4,322,467

DECALCOMANIA

Kim P. Heimbach, Corning, N.Y., and Ronald E. Johnson, Tioga, Pa., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 74,910, Sep. 13, 1979. This application Sep. 8, 1980, Ser. No. 184,773
Int. Cl.³ B32B 3/18; B41M 3/12
U.S. Cl. 428—200 18 Claims

1. A decalcomania or decal comprising: a backing layer, a release layer deposited thereon and at least one layer formed of heat processable melted thermoplastic ink deposited over said release layer, said thermoplastic ink being heat processed from

a molten condition to at least a partially solidified condition prior to deposition on said release layer and exhibiting pressure-sensitivity at a temperature below that where said ink becomes heat processable.

4,322,468

ABRASION-RESISTANT DECORATIVE LAMINATES

Ram S. Raghava, Ann Arbor, Mich., assignor to Formica Corporation, Wayne, N.J.

Continuation-in-part of Ser. No. 46,143, Jun. 6, 1979, abandoned. This application Oct. 30, 1980, Ser. No. 202,043

Int. Cl.[3] **B32B** *3/00, 5/16, 27/08, 29/04*

U.S. Cl. 428—204 **8 Claims**

1. A heat and pressure consolidated laminate consisting essentially of, in superimposed relationship,

(a) a core layer consisting of a self-supporting substrate;

(b) a print layer consisting of an opaque alpha cellulose paper sheet impregnated with a melamine-formaldehyde thermoset resin and containing finely divided abrasive materials; and

(c) a surface coating located upon the print layer of a hydrolyzed polyvinyl alcohol having a degree of hydrolysis equal to or greater than about 99.0 percent of the acetate groups modified melamine-formaldehyde resin wherein the surface coating weight is from about 40 to 140 grams per square meter and the amount of hydrolyzed polyvinyl alcohol in the surface coating is from about 5 to 30 percent by weight of the total weight of the melamine-formaldehyde reaction product solids.

8. A method of producing a heat and pressure consolidated laminate of claim 1 which comprises:

(a) positioning a laminate assembly between press plates wherein said laminate assembly consists essentially of, in superimposed relationship,

(1) a core layer consisting of a self-supporting substrate;

(2) a print layer consisting of an opaque alpha cellulose paper sheet impregnated with a melamine-formaldehyde thermoset resin and containing finely divided abrasive materials; and

(3) a surface coating of a hydrolyzed polyvinyl alcohol having a degree of hydrolysis equal to or greater than about 99.0 percent of the acetate groups modified melamine-formaldehyde resin wherein the surface coating weight is from about 40 to 140 grams per square meter and the amount of hydrolyzed polyvinyl alcohol in the surface coating is from about 5 to 30 percent by weight of the total weight of the melamine-formaldehyde reaction product solids,

(b) applying sufficient temperature and pressure to the laminate assembly to cure the resins impregnating the laminate assembly, thereby providing the consolidated laminate; and

(c) recovering the resultant consolidated laminate.

4,322,469

ELECTROSTATIC RECORDING MEDIUM

Keita Nakano, and Masanori Itoh, both of Tokyo, Japan, assignors to Xerox Corporation, Stamford, Conn.

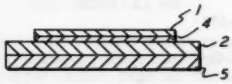
Filed Nov. 14, 1980, Ser. No. 207,556

Claims priority, application Japan, Dec. 6, 1979, 54/167460

Int. Cl.[3] **B32B** *7/02, 27/36*

U.S. Cl. 428—212 **10 Claims**

1. An electrostatic recording medium, for use in an electrographic process for forming an electrostatic latent image by the action of one or more electrodes, which comprises an electrically insulating base having a volume resistivity greater than about 10^{14} ohm cm, a resistance layer having a volume resistivity of from about 10^{6} ohm cm to about 10^{9} ohm cm on said base, an adhesive layer on said resistance layer, said adhesive layer being made of a conductive polymeric emulsion having a conductive filler dispersed therein and having a volume resistivity of from about 10^{6} ohm cm to about 10^{9} ohm cm,



said volume resistivity of said adhesive layer being not lower than said volume resistivity of said resistance layer and an electrically insulating recording layer laminated to said resistance layer by said adhesive layer, said adhesive layer being made of a material so that the volume resistivity of the resultant recording medium is relatively unaffected by changes in humidity conditions.

4,322,470

RESIN COMPOSITIONS COMPRISING AMINE OR AMMONIA SALTS OF MALENIZED BUTADIENE POLYMERS ARE USED TO FORM FIBROUS LAMINATES

Hajime Hara, Fujisawa; Shingo Orii, Kawasaki, and Yoshihiko Araki, Tokyo, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Feb. 8, 1980, Ser. No. 119,612

Claims priority, application Japan, Feb. 13, 1979, 54/14214; May 22, 1979, 54/62179

Int. Cl.[3] **B32B** *27/04, 27/12;* **C09J** *3/14*

U.S. Cl. 428—246 **5 Claims**

1. A laminate prepared by impregnating a resin composition consisting essentially of (1) an amidated butadiene polymer prepared by reacting a butadiene polymer having a number-average molecular weight of 300–10,000 with maleic anhydride and then reacting the resulting maleinized butadiene polymer with at least one member selected from the group consisting of ammonia and primary amines and (2) a resol, into fibrous materials, piling the thus obtained prepregs and then curing the piled prepregs together to obtain the laminate.

4,322,471

HEAT-SENSITIVE RECORDING ELEMENT

Nobuhiro Miyakawa, Kobe, Japan, assignor to Mita Industrial Company Limited, Osaka, Japan

Filed Mar. 25, 1980, Ser. No. 133,806

Claims priority, application Japan, Mar. 30, 1979, 54/37070

Int. Cl.[3] **B32B** *00/00*

U.S. Cl. 428—341 **5 Claims**

1. A heat-sensitive recording element comprising a substrate and a recording layer formed on the substrate, said recording layer comprising a leuco pigment, an organic acidic substance which is solid at normal temperatures and is fusible under heating, and a polymeric binder in which said organic leuco pigment and said organic acidic substance are dispersed, wherein said polymeric binder is hot water-soluble starch partially esterified with a monocarboxylic acid having up to 6 carbon atoms and having 0.01 to 0.2 ester group per glucose unit of the starch, said leuco pigment and said organic acidic substance being present in an amount of 30 to 70% by weight and 100% to 400% by weight, based on the partially esterified starch, respectively.

4,322,472

ADHESIVE BASED ON A STARCH AND ACRYLAMIDE GRAFT COPOLYMER

Mark L. Kaspar, Oshkosh, and James F. Lowey, Fremont, both of Wis., assignors to Alco Standard Corporation, Valley Forge, Pa.

Continuation-in-part of Ser. No. 103,596, Dec. 14, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 201,289

Int. Cl.[3] B32B *27/00*

U.S. Cl. 428—350 16 Claims

1. An aqueous adhesive composition with a high solids content and having rheological properties permitting application by transfer roll coating to a reinforced sealing tape to form a remoistenable adhesive coating thereon, said composition comprising

(a) water as a liquid carrier; and

(b) a graft copolymer of a low amylose starch and acrylamide as the essential adhesive, said copolymer being obtained by a reaction simultaneously gelatinizing said starch and graft polymerizing said acrylamide thereto in said water at a solids content of about 45 to 60% by weight and in the presence of catalytic amounts of a free radical initiator and at least one water-soluble metal salt selected from the group consisting of cupric and ferric salts, said reaction being carried out at an elevated temperature and for a period of time sufficient to yield a viscosity of said coatable adhesive composition of less than 1,000 cps, measured on a Brookfield viscometer, #2 spindle at 20 rpm and 190° F.

4,322,473

ORGANOSILOXANES WITH SIC-BONDED GROUPS AND A PROCESS FOR PREPARING THE SAME

Walter Hafner, Furth; Erich Markl, Munich; Ludwig Eibel, Munich; Gerhard Kreis, Munich; Dietrich Samrowski, Munich; Manfred Wick, Schliersee; Bernward Deubzer, Burghausen, and Wilhelm Friedrich, Munich, all of Fed. Rep. of Germany, assignors to Consortium für Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Division of Ser. No. 15,551, Feb. 26, 1979, Pat. No. 4,207,246. This application Aug. 20, 1979, Ser. No. 68,114

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1978, 2809874

Int. Cl.[3] D02G *3/00*

U.S. Cl. 428—391 5 Claims

1. Fibers treated with organosiloxanes having at least one unit of the formula

$$ROOCCH_2CH(COOR)CH_2CHR'CH_2Si(CH_3)_aO\frac{3-a}{2}$$

in which R is selected from the group consisting of monovalent hydrocarbon radicals having from 1 to 12 carbon atoms which are free of aliphatic unsaturation and monovalent hydrocarbon radicals having one ether oxygen atom, R′ is selected from the group consisting of hydrogen and a CH_3 radical and a is 0, 1 or 2.

4,322,474

MAGNETIC RECORDING MEDIUM

Takeshi Matsuura, Kyoto, and Seiji Watatani, Takatsuki, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Mar. 3, 1980, Ser. No. 126,944

Claims priority, application Japan, Mar. 3, 1979, 54-24965

Int. Cl.[3] G11B *5/70*

U.S. Cl. 428—411 3 Claims

1. A magnetic recording medium comprising an elastic base sheet and a magnetic layer containing magnetic powders and a synthetic resin binder provided on said base sheet, characterized in that the magnetic layer further contains (A) at least one ester of stearic acid and an aliphatic alcohol having 3 to 6 carbon atoms, (B) at least one saturated aliphatic acid having 14 to 18 carbon atoms and (C) at least one zinc salt of a saturated aliphatic acid having 14 to 18 carbon atoms, wherein the content of the component (A) is from 0.5 to 2.0% by weight based on the weight of the magnetic powders in the magnetic layer, the content of the component (B) is from ¼ to 1 part by weight to 1 part of the component (A) and the content of the component (C) is from ⅛ to 1 part by weight to 1 part by weight of the combined amount of the components (A) and (B).

4,322,475

ARTICLE HAVING SURFACE COATED WITH PAINTS CONTAINING 3-ISOTHIAZOLONES

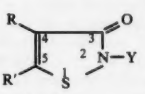
Sheldon N. Lewis, Willow Grove; George A. Miller, Glenside, and Andrew B. Law, Levittown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 910,730, May 30, 1978, Pat. No. 4,243,403, which is a division of Ser. No. 368,168, Jun. 8, 1973, Pat. No. 4,105,431, which is a continuation-in-part of Ser. No. 836,660, Jun. 25, 1969, Pat. No. 3,761,488, which is a continuation-in-part of Ser. No. 672,437, Oct. 3, 1967, Pat. No. 3,523,121, which is a continuation-in-part of Ser. No. 621,780, Mar. 9, 1967, abandoned. This application Jul. 31, 1980, Ser. No. 174,086

Int. Cl.[3] A01N *43/78;* B32B *15/08, 17/10, 27/30*

U.S. Cl. 428—411 8 Claims

1. An article of manufacture having on a surface thereof a dry paint film comprising a dried film-forming agent, said paint film containing a mildewcide compound of the formula



wherein

Y is an unsubstituted alkyl, alkenyl, or alkynyl group of 1 to 18 carbon atoms, an unsubstituted or substituted cycloalkyl group having a 3 to 6 carbon atom ring and up to 12 carbon atoms, an unsubstituted or substituted aryl group of up to 10 carbon atoms,

R is hydrogen, halogen or a (C_1–C_4) alkyl group, and

R′ is hydrogen, halogen, or a (C_1–C_4) alkyl group, or a salt of a compound of the above formula with a strong acid, said compound being presented in an amount which is effective to adversely affect the growth of bacteria, fungi, or algae.

4,322,476

IMPACT RESISTANT LAMINATE

Richard E. Molari, Jr., Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 12, 1979, Ser. No. 102,775

Int. Cl.[3] B32B *9/04, 17/10, 27/00*

U.S. Cl. 428—412 16 Claims

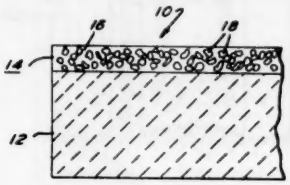
1. In an improved impact or shock resistant laminate exhibiting improved resistance to spalling comprising a plurality of impact or shock receiving layers bonded together by a compatible adhesive and selected from, glasses and solid resinous materials selected from the group consisting of polycarbonate epoxies, polyurethanes, chlorinated aromatic ethers, polyether sulfones, acrylics, rubber modified acrylics, polyarylsulfones, polystyrenes, cellulose acetate butyrates, and polyesters, including a back polycarbonate lamina disposed opposite the direction of impact or shock, said back polycarbonate lamina having disposed on the exposed surface thereof opposite the direction of impact or shock a mar-resistant coating harder and more brittle than the underlying polycarbonate lamina; the improvement consisting of an intermediate layer which is relatively less brittle and softer than said mar-resistant coating disposed between said exposed surface of said back polycarbonate lamina and said mar-resistant coating.

4,322,477

ELECTRICAL RESISTOR MATERIAL, RESISTOR MADE THEREFROM AND METHOD OF MAKING THE SAME

Richard L. Wahlers, Churchville, and Kenneth M. Merz, Gladwyne, both of Pa., assignors to TRW, Inc., Cleveland, Ohio

Filed Sep. 15, 1975, Ser. No. 613,433
Int. Cl.[3] B32B 17/06; H01B 1/06
U.S. Cl. 428—432 4 Claims



1. A method of making electrical resistors providing selected resistivities within a wide range and with controlled temperature coefficients of resistance comprising the steps of

mixing together a glass frit and conductive particles consisting essentially of tin oxide, the glass frit being present in the amount of 30% to 80% by volume and the tin oxide being heat treated in a furnace having a nitrogen atmosphere and a peak temperature of 1100° C. for about one hour prior to mixing the tin oxide with the glass frit,

applying said mixture to a surface of a substrate, and

firing said coated substrate in an inert atmosphere to a selected temperature at which the glass softens but below the point at which the tin oxide melts.

3. An electrical resistor of the vitreous glaze type made by mixing together a glass frit and conductive particles consisting essentially of tin oxide, the glass frit being present in the amount of 30% to 80% by volume and the tin oxide being heat treated in a furnace having a nitrogen atmosphere and a peak temperature of 1100° C. for about one hour prior to mixing the tin oxide with the glass frit,

applying said mixture to a surface of a substrate, and

firing said coated substrate in an inert atmosphere to a temperature at which the glass softens and below the point at which the tin oxide melts.

4,322,478

MAGNESIUM-CONTAINING COMPLEXES, METHOD FOR THEIR PREPARATION, AND COMPOSITIONS CONTAINING THE SAME

John W. Forsberg, Mentor-On-The-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 13,509, Feb. 21, 1979, Pat. No. 4,260,500, which is a continuation-in-part of Ser. No. 882,511, Mar. 1, 1978, abandoned, which is a division of Ser. No. 760,315, Jan. 18, 1977, Pat. No. 4,094,801, which is a continuation-in-part of Ser. No. 681,627, Apr. 29, 1976, abandoned. This application Sep. 2, 1980, Ser. No. 183,667
Int. Cl.[3] B32B 9/00
U.S. Cl. 428—471 22 Claims

1. An article of manufacture comprising a metal object coated with a thixotropic non-carbonated magnesium containing complex prepared by heating, at a temperature above about 30° C., a mixture comprising:

(A) At least one magnesium hydroxide, magnesium oxide, hydrated magnesium oxide, and a magnesium alkoxide;

(B) At least one oleophilic organic reagent comprising a sulfonic acid, a pentavalent phosphorus acid, a mixture of a major amount of either of the above with a minor amount of a carboxylic acid, or an ester or alkali metal or alkaline earth metal salt of any of these;

(C) Water, if necessary to convert a substantial proportion of component A to magnesium hydroxide or hydrated magnesium oxide; and

(D) At least one organic solubilizing agent for component B; the ratio of equivalents of magnesium to the acid portion of component B being at least about 5:1, and the amount of water present, if any, being at least sufficient to hydrate a substantial proportion of component A calculated as magnesium oxide.

4,322,479

MAGNESIUM OXIDE-CARBOXYLATE COMPLEXES, METHOD FOR THEIR PREPARATION, AND COMPOSITIONS CONTAINING THE SAME

John W. Forsberg, Mentor-On-The-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 13,508, Feb. 21, 1979, Pat. No. 4,253,976, which is a continuation-in-part of Ser. No. 882,511, Mar. 1, 1978, abandoned, which is a division of Ser. No. 760,315, Jan. 18, 1977, Pat. No. 4,094,801, which is a continuation-in-part of Ser. No. 681,627, Apr. 29, 1976, abandoned. This application Sep. 2, 1980, Ser. No. 183,674
Int. Cl.[3] B35B 9/00
U.S. Cl. 428—471 15 Claims

1. An article of manufacture comprising a metal object coated with a thixotropic non-carbonated magnesium-containing complex prepared by heating, at a temperature above about 30° C., a mixture comprising:

(A) At least one of magnesium hydroxide, magnesium oxide, hydrated magnesium oxide, and a magnesium alkoxide;

(B) At least one oleophilic organic reagent comprising a carboxylic acid, a mixture of a major amount thereof with a minor amount of a sulfonic acid or pentavalent phosphorus acid, or an ester or alkali metal or alkaline earth metal salt of either of these;

(C) Water, if necessary to convert a substantial proportion of component A to magnesium hydroxide or hydrated magnesium oxide; and

(D) At least one organic solubilizing agent for component B; the ratio of equivalents of magnesium to the acid portion of component B being at least about 5:1, and the amount of water present, if any, being at least sufficient to hydrate a substantial proportion of component A calculated as magnesium oxide.

4,322,480

POLYAMIDE-POLYETHYLENE LAMINATES

Harold W. Tuller, Long Valley; Stephen R. Schulze, West Caldwell, and George S. Wilson, Ringwood, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Dec. 29, 1980, Ser. No. 220,884
Int. Cl.[3] B32B 27/34, 27/32
U.S. Cl. 428—476.1 24 Claims

1. A laminate structure comprised of:

at least one layer of a polyamide; and

at least one layer of polyethylene containing from 0.1 to 20% based on the weight of the polyethylene of oxidized polyethylene.

4,322,481

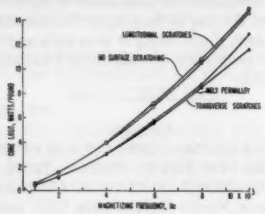
LOSS CHARACTERISTICS IN AMORPHOUS MAGNETIC ALLOYS

Robert F. Krause, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 8, 1980, Ser. No. 119,688
Int. Cl.[3] H01F 1/00
U.S. Cl. 428—611 4 Claims

1. In combination with a strip of magnetic material of the type wherein the body of the strip is substantially composed of amorphous magnetic metal alloy and magnetized in a predetermined direction at a frequency of at least 1000 hertz, the loss reducing improvement which comprises:

at least three grooves on at least one surface of said strip, said grooves having a depth of between 0.1 and 10% of the



strip thickness and running generally transverse to the direction of magnetization.

4,322,482

ELECTROLYTE MATRIX FOR MOLTEN CARBONATE FUEL CELLS

Calvin L. Bushnell, Glastonbury, Conn.; Lawrence J. Bregoli, Southwick, Mass., and Craig R. Schroll, West Hartford, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 9, 1980, Ser. No. 158,019
Int. Cl.³ H01M *4/86*
U.S. Cl. 429—41 **10 Claims**

1. In a fuel cell utilizing a molten carbonate-type electrolyte and including a matrix for retaining said electrolyte, said matrix comprising submicron support particles of a material compatible with the electrolyte under cell operating conditions, the improvement comprising:

wherein said matrix is a blend of at least 5.0 volume percent crack attenuator particles with a balance of said submicron support particles, said crack attenuator particles being of a material compatible with the electrolyte under cell operating conditions and having size sufficiently larger than said support particles and being present in sufficient quantity to result in the formation of a multitude of microcracks and no thru cracks in said matrix upon cool down of said matrix from operating to room temperature.

4,322,483

METHOD OF UTILIZING EMPTY ALUMINUM BEVERAGE CANS TO PROVIDE AN ENERGY SOURCE

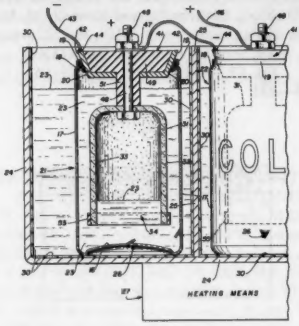
Harold S. Tune, P.O. Box 6275, Penn Valley, Calif. 95946

Filed Jul. 7, 1980, Ser. No. 166,239
Int. Cl.³ H01M *10/44*
U.S. Cl. 429—50 **9 Claims**

1. A method of utilizing empty aluminum cans to provide a source of electrical energy comprising the steps of:

(a) placing an empty aluminum can in contact with an electrolyte medium over a substantial area thereof; and

(b) positioning a cup-like carbon depolarizer inverted in said electrolyte medium in spaced relation to said aluminum can with one surface of said carbon depolarizer in contact with said electrolyte medium and an oppositely facing surface thereof in contact with air;



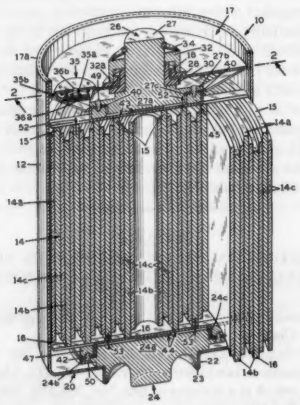
whereby the combination of said aluminum can, said carbon depolarizer, and said electrolyte medium form a metal-air cell providing a source of electrical energy.

4,322,484

SPIRAL WOUND ELECTROCHEMICAL CELL HAVING HIGH CAPACITY

Raymond K. Sugalski, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Continuation of Ser. No. 939,355, Sep. 5, 1978, abandoned. This application Sep. 16, 1980, Ser. No. 187,743
Int. Cl.³ H01M *6/10*
U.S. Cl. 429—94 **17 Claims**



1. In an improved electrochemical cell having a sealed casing, at least one external electrical terminal at an end of the casing, at least one spirally wound electrode plate in said casing electrically connected to said terminal and having a plurality of exposed plate edge portions, the improvement comprising:

said electrically conductive terminal having an inner surface engaging said exposed edge portions of the electrode plate so as to be in electrical contact therewith, thereby to provide a plurality of electrode edge contact areas on said terminal inner surface for the transfer of current from the electrode plate to the terminal, said terminal further having a projecting portion at the exterior of said casing, and wherein said cell includes a heat sink encircling said terminal thermally coupled between said terminal and said electrode plate.

4,322,485

PREPARATION OF MATERIALS

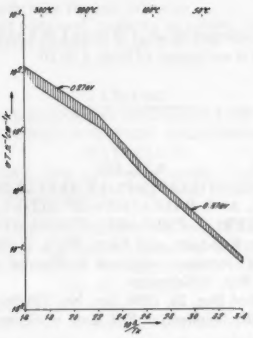
Keith T. Harrison, Wantage; Peter McGeehin, Newbury, and Alan Hooper, Abingdon, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Jun. 5, 1980, Ser. No. 156,584

Claims priority, application United Kingdom, Jun. 13, 1979, 20506/79

Int. Cl.[3] H01M *6/18;* H01G *9/02*

U.S. Cl. 429—193 22 Claims



1. A process for use in the preparation of a material of the general formula:

$$Na_{1+x}Zr_2Si_xP_{3-x}O_{12}$$

wherein the value of x is defined by $0 \leqq x \leqq 3.0$, which process includes the step of forming a precursor for the material by precipitating zirconia, or a precursor therefor, from solution or colloidal dispersion, in the presence of elements selected from the group consisting of sodium, silicon, phosphorous and oxygen.

4,322,486

ELECTROPHOTOGRAPHIC PROCESS INVOLVING DOUBLE CHARGING

Jan A. de Putter, Velden, and Johannes Kortenoeven, Helden-Panningen, both of Netherlands, assignors to Oce-van der Grinten N.V., Venlo, Netherlands

Filed Mar. 22, 1979, Ser. No. 22,732

Claims priority, application Netherlands, Mar. 29, 1978, 7803301

Int. Cl.[3] G03G *13/02, 13/22*

U.S. Cl. 430—31 5 Claims

1. In a process for the formation of an electrostatic image by first positively and then negatively charging, and then imagewise exposing to light, the top layer of a photoconductive element that comprises an electrically conductive layer having thereon a photoconductive zinc oxide-binder layer covered by an electrically insulating top layer of not more than about 15 microns in thickness, the improvement which comprises effecting the negative charging by continuing it at least until the photoconductive element is saturated with negative charge, thereby upon said exposing producing on said element a developable negatively charged electrostatic image in a positively charged background with a substantially constant potential contrast between the image and the background areas.

4,322,487

COMPOSITE ELECTRICALLY PHOTOSENSITIVE PARTICLES FOR ELECTROPHORETIC MIGRATION IMAGING PROCESS

Stewart H. Merrill; Frederick A. Stahly; Ernest W. Turnblom; Beth G. Wright, and Hal E. Wright, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 8, 1979, Ser. No. 64,972

Int. Cl.[3] G03G *5/06, 17/04*

U.S. Cl. 430—37 21 Claims

1. An electrophoretic migration imaging dispersion comprising an electrically insulating carrier, and a plurality of electrically photosensitive particles wherein at least a portion of said electrically photosensitive particles is a composite particle comprising a colorant and a polymeric binder comprising repeating units containing one or more structures selected from the classes consisting of triarylamines; p-aminotetraarylmethane;s 4,4'-bis(p-amino)triarylmethanes; 1,1-bis(p-aminoaryl)isobutanes; 1,1-bis(p-aminoaryl)cyclohexanes; N-alkyl-N,N-diarylamines; N,N-dialkyl-N-arylamines and heterocyclic nitrogen compounds having about 4 to 10 carbon atoms.

4,322,488

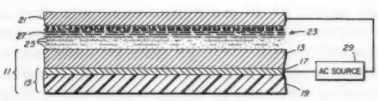
DEVELOPING LATENT ELECTROSTATIC IMAGES USING A LIQUID TONER AND A DEVELOPMENT ELECTRODE

Manfred R. Kuehnle, Lexington, Mass.; John R. Manhardt, Nashua, N.H., and Malor Wright, Lincoln, Mass., assignors to Coulter Systems Corporation, Bedford, Mass.

Continuation of Ser. No. 898,729, Apr. 24, 1978, abandoned. This application Jan. 30, 1980, Ser. No. 116,953

Int. Cl.[3] G03G *13/10*

U.S. Cl. 430—103 10 Claims

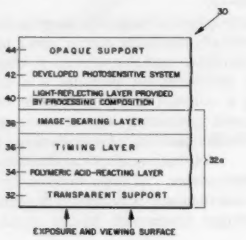


1. A method of preventing the formation of voids developed on a toned electrostatic image during development as a result of the unrestricted formation of Bénard type convection cells during electrophotographic development of a latent electrostatic image formed on the surface of an electrophotographic member using a liquid toner formed of toner particles suspended in an insulating liquid and a development electrode, the insulating liquid being hydrodynamically unstable during toning, the hydrodynamic instability being effected by movement of the toner particles through said insulating liquid under the influence of the electric field forces between said electrophotographic member and the development electrode, propulsion of said toner particles effecting a concurrent movement of the insulating liquid whereby a body thereof is carried with each particle as a trailing body of insulating liquid to define spatially stable Bénard type convection cells therewithin; the improvement comprising applying an AC bias voltage between the development electrode and the electrophotographic member across the liquid toner during the developing operation changing the direction of the electric field forces exerted on the particles by said electric field impelling those particles through the insulating liquid materially inhibiting the formation of said spatially stable Bénard type convection cells within the said toner suspension whereby to be non-interferent with accumulation of toner particles on the surface of the electrophotographic member primarily dependent upon the field strength of said latent electrostatic image.

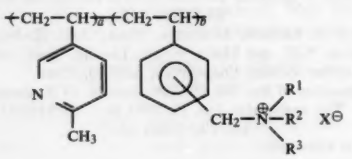
4,322,489
COPOLYMERIC MORDANTS AND PHOTOGRAPHIC PRODUCTS AND PROCESSES UTILIZING SAME

Edwin H. Land, Cambridge; Irena Y. Bronstein-Bonte, Newton, and Lloyd D. Taylor, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 22, 1980, Ser. No. 142,636
Int. Cl.[3] G03G 7/00, 5/54
U.S. Cl. 430—213 41 Claims



1. An image-receiving element which comprises a support carrying an image-receiving layer comprising a copolymeric mordant consisting essentially of recurring units according to the formula

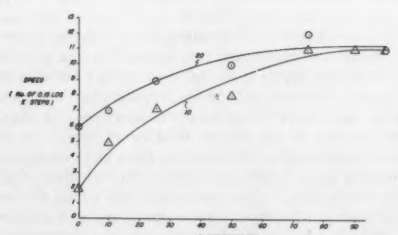


wherein each of R^1, R^2 and R^3 is independently alkyl; substituted alkyl; cycloalkyl; aryl; aralkyl; alkaryl; or at least two of R^1, R^2 and R^3, together with the quaternary nitrogen atom to which they are bonded complete a saturated or unsaturated, substituted or unsubstituted nitrogen-containing heterocyclic ring; X is an anion; and wherein the molar ratio of the respective recurring units represented by integers a and b is in the range of from about 0.1:1 to about 10:1.

4,322,490
PHOTOPOLYMERIZABLE COMPOSITIONS FEATURING IMPROVED MONOMERS

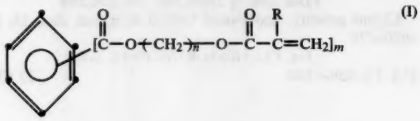
Michel F. Molaire, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,819
Int. Cl.[3] G03C 1/68
U.S. Cl. 430—281 8 Claims



1. In a light-sensitive polymerizable composition comprising a polymerizable monomer, a polymeric binder, and a photoinitiator composition;

the improvement wherein said monomer comprises a speed-enhancing amount of a compound having the structure



(I)

wherein R is hydrogen or alkyl of from 1 to 5 carbon atoms, m equals 1 and n is an integer of from 2 to 10.

4,322,491
MIXTURE WHICH IS POLYMERIZABLE BY RADIATION, AND RADIATION-SENSITIVE COPYING MATERIAL PREPARED THEREWITH

Jürgen Sander, Kelkheim, and Klaus Horn, Hofheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

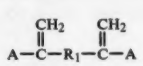
Filed Dec. 24, 1980, Ser. No. 220,090
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1979, 2952697
Int. Cl.[3] G03C 1/68
U.S. Cl. 430—286 10 Claims

1. A mixture which is polymerizable by radiation and contains, as the essential constituents,

(a) a polymeric binder,

(b) a polymerization initiator which can be activated by radiation, and

(c) a polymerizable compound of the formula I



I

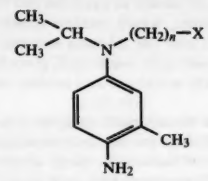
in which R_1 is a divalent aliphatic group having 1 to 15 carbon atoms which also can be partially replaced by hetero-atoms, a divalent cycloaliphatic group having 3 to 15 carbon atoms, or a mixed aliphatic-aromatic group having 7 to 15 carbon atoms, and A is an electron-attracting radical.

4,322,492
PROCESS FOR THE DEVELOPMENT OF COLOR PHOTOGRAPHIC IMAGES WITH P-DIALKYLAMINOANILINE COLOR DEVELOPERS

Friedrich-Wilhelm Kunitz; Walter Püschel, both of Leverkusen, and Karl W. Schranz, Odenthal-Hahnenberg, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 780,129, Mar. 22, 1977, abandoned. This application Apr. 23, 1981, Ser. No. 256,958
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1976, 2613120
Int. Cl.[3] G03C 5/30
U.S. Cl. 430—375 4 Claims

1. An aqueous alkaline colour developer composition for the development of colour photographic materials based on silver halide, and composition containing a colour developer of the methyl-p-dialkylaminoaniline series, wherein the improvement comprises the colour developer used is a compound of the formula:



or water-soluble salts thereof, wherein
X represents hydroxyl, methoxy or sulpho, and
n represents an integer of from 2 to 4.

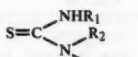
4,322,493

REVERSAL PROCESSING METHODS FOR BLACK AND WHITE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

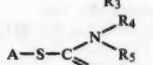
Haruo Shibaoka, and Katsumi Hayashi, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sep. 26, 1979, Ser. No. 78,872
Claims priority, application Japan, Sep. 26, 1978, 53-118185; Sep. 27, 1978, 53-118987; Dec. 22, 1978, 53-162265
Int. Cl.[3] G03C *5/50*
U.S. Cl. 430—407 **15 Claims**

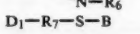
1. In a method for reversal development processing for an imagewise exposed black and white silver halide photographic light-sensitive material which comprises a first development, a development stopping, a bleaching, a second exposure or chemical fogging and a second development with a developing solution, the improvement which comprises bleaching the light-sensitive material with a bleaching solution containing an oxidizing agent which converts a silver image which is present into a water-soluble silver salt, in the presence of at least one bleach-accelerating agent which is incorporated into the development stopping solution represented by the following formulae (I) to (III) and (V) to (VIII):



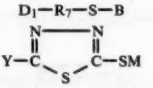
(I)



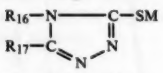
(II)



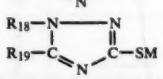
(III)



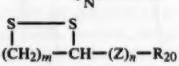
(V)



(VI)



(VII)



(VIII)

wherein R_1 to R_6 each is a hydrogen atom, a straight or branched chain alkyl group having 1 to 6 carbon atoms, a hydroxyalkyl group having 1 to 6 carbon atoms, a monocyclic aryl group or a monocyclic aralkyl group having 7 to 10 carbon atoms which may be substituted with a halogen atom or a sulfo group, provided R_1, R_2 and R_3 are not hydrogen atoms at the same time, or R_1 and R_2, R_2 and R_3, R_4 and R_5 or R_5 and R_6 may combine to form a saturated or unsaturated 5-membered ring such as an imidazole ring imidazoline ring, A is a hydrogen atom or a hydrocarbon group having 1 to 10 carbon atoms which may be substituted with a carboxy group, a sulfo group, a hydroxy group, an amino group or an alkylamino group, D_1 is a hydrogen atom a hydroxy group or

R_8 and R_9 each is a hydrogen atom, a methyl group or an ethyl group, R_7 is an alkylene group having 1 to 4 carbon atoms which may be substituted with a hydroxy group, a mercapto group or a carboxy group, B is a hydrogen atom or —S—R_{10}—D_2, where D_2 is a hydrogen atom, a hydroxy group or

in which D_1 and D_2 are not hydrogen atoms at the same time, R_{11} and R_{12} have the same definition as R_8 and R_9, R_{10} has the same definition as R_7, Y is —SM, an amino group, an alkylamino group having 1 to 3 carbon atoms, —SR_{15} or —R_{15}, R_{15} is a straight or branched chain alkyl group having 1 to 4 carbon atoms, a straight or branched chain alkoxy group having 1 to 4 carbon atoms, an allyl group or an unsubstituted or substituted phenyl group, R_{16}, R_{17}, R_{18} and R_{19} each is a hydrogen atom, a straight or branched chain alkyl group having 1 to 4 carbon atoms, a straight or branched chain alkoxy group having 1 to 4 carbon atoms or an unsubstituted or substituted phenyl group, Z is an alkylene group having 1 to 6 carbon atoms, R_{20} is a carboxy group, a carboxylic acid salt group, a carboxylic acid ester group or a carboxylic acid amido group, m is 2 or 3, n is 0 or 1, and M is a hydrogen atom, an alkali metal atom, an ammonium ion, a straighr or branched chain alkyl group having 1 to 4 carbon atoms or an alkoxy group having 1 to 4 carbon atoms.

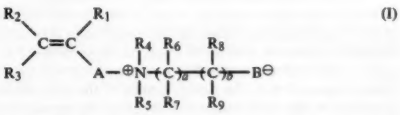
4,322,494

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Junji Minamizono; Yoshiro Kawashima; Shingo Ishimaru, and Noriyuki Inoue, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 23, 1981, Ser. No. 227,907
Claims priority, application Japan, Jan. 23, 1980, 55/6510
Int. Cl.[3] G03C *1/28, 1/34*
U.S. Cl. 430—599 **18 Claims**

1. A silver halide photographic light-sensitive material comprising a support having coated therein at least one silver halide emulsion layer, said photographic light-sensitive material containing a sensitizing amount of a compound represented by formula (I)



(I)

wherein R_1, R_2, and R_3 each represents hydrogen, an alkyl group, a carboxy group, or a substituted alkyl group; R_4 and R_5 each represents hydrogen, an alkyl group, a substituted alkyl group, or an aralkyl group, or R_4 and R_5 together represent an atomic group forming a heterocyclic ring or an atomic group forming a heterocyclic ring together with A; R_6, R_7, R_8, and R_9 each represents hydrogen, an alkyl group or a substituted alkyl group; A represents a divalent connecting group which is an ether group, an alkylene group, a substituted alkylene group, an arylene group, a substituted arylene group, an aralkylene group, a substituted aralkylene group, a —$COOR_{10}$-group, a —OCO—R_{10}-group,

$$a\ -CON-R_{10}-\text{group},$$
(R_{11} above the N)

or an atomic group forming a heterocyclic ring together with R_4 and R_5;

wherein R_{10} represents a divalent group selected from an alkylene group, an arylene group, and an aralkylene group, or an atomic group forming a heterocyclic ring together with R_4 or R_5;

and wherein R_{11} represents hydrogen, an alkyl group, or an atomic group forming a heterocyclic ring together with R_4 and R_{10}, or R_5 and R_{10}; a and b can each represents 0 or a positive integer, provided that a and b are not both 0; and B represents —COO or $-SO_3$.

4,322,495

IMMUNOASSAY

Kenneth H. Kato, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Co., Saint Paul, Minn.

Filed Mar. 11, 1980, Ser. No. 129,357
Int. Cl.³ G01N *33/54*
U.S. Cl. 435—7 **24 Claims**

1. An immunochemical method for determining the presence of antibodies specific to *D. immitis* in canine blood serum by means of a detectable enzyme-substrate reaction which comprises

(1) inoculating a multiplicity of intact or whole canine *D. immitis* microfilariae immobilized on a solid surface with a sample of blood serum to be tested;

(2) incubating the components of (1) to allow the components to react;

(3) washing to remove unreacted material from the solid surface;

(4) introducing an enzyme-labeled indicating anti-antibody which is specific to canine *D. immitis* antibodies to the remaining solid surface;

(5) incubating the components of (4) to allow the components to react;

(6) washing to remove unreacted material from the solid surface; and

(7) applying to the solid surface an indicator capable of reacting with the enzyme of (4) to produce a detectable enzyme-substrate reaction.

13. An immunochemical test kit having component parts adapted to be used together to determine the presence or absence of antibodies specific to *D. immitis* in samples of canine blood serum, the kit comprising the combination of

a. a solid support having a multiplicity of *D. immitis* microfilariae immobilized thereon,

b. an enzyme-labeled indicating anti-antibody which is specific to canine *D. immitis* and

c. an indicator capable of reacting with the enzyme to produce a detectable enzyme-substrate reaction,

whereby the treated support a can be inoculated with a sample of blood serum to be tested and the combination incubated and washed to remove unreacted material, then exposed to be and again incubated and washed to remove unreacted material and finally exposed to c; the development of the enzyme-substrate reaction on the solid support indicating the presence of antibodies specific to *D. immitis* in the sample being tested and the lack of development of the enzyme-substrate reaction thereon indicating the absence of the antibocies from the sample.

4,322,496

INHIBITION OF LACTATE OXIDASE

Theodore W. Esders, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 17, 1980, Ser. No. 141,026
Int. Cl.³ C12Q *1/26*; C12N *9/99*
U.S. Cl. 435—25 **13 Claims**

1. A method for inhibiting the activity of lactate oxidase, which in the presence of oxygen catalyzes the direct conversion of lactic acid or lactate to pyruvate and hydrogen peroxide rather than water, which method comprises interacting said oxidase and at least one inhibitor selected from the group consisting of glyoxalic acid, oxalic acid, glycolic acid, and salts thereof to reduce the activity of said oxidase on lactic acid and lactate.

5. A method for the enzymatic analysis of an aqueous liquid wherein said analysis is for the determination of an analyte, other than lactate or lactic acid, using an enzymatic reagent composition which produces hydrogen peroxide as a detectable species in the presence of said analyte, said method comprising detecting said analyte in the presence of at least one inhibitor for lactate oxidase, said lactate oxidase in the presence of oxygen catalyzing the direct conversion of lactic acid or lactate to pyruvate and hydrogen peroxide rather than water, said inhibitor being selected from the group consisting of glycolic acid, oxalic acid, glyoxalic acid and salts thereof.

8. An enzymatic reagent composition comprising one or more enzymes effective to generate hydrogen peroxide in the presence of oxygen and substrate other than lactate oxidase, said lactate oxidase in the presence of oxygen catalyzing the direct conversion of lactic acid or lactate to pyruvate and hydrogen peroxide rather than water, said inhibitor being selected from the group consisting of glycolic acid, oxalic acid, glyoxalic acid and salts thereof.

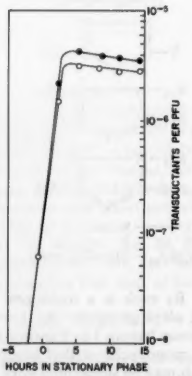
11. An essentially dry analytical element comprising an enzymatic reagent composition in one or more reagent zones of said element, each component of said composition being in at least one of said reagent zones, said composition comprising one or more enzymes effective to generate hydrogen peroxide in the presence of oxygen and substrate other than lactate or lactic acid for said enzymes, and an inhibitor for lactate oxidase, said lactate oxidase in the presence of oxygen catalyzing the direct conversion of lactic acid or lactate to pyruvate and hydrogen peroxide rather than water, said inhibitor being selected from the group consisting of glycolic acid, oxalic acid, glyoxalic acid and salts thereof.

4,322,497

PROCESS FOR TRANSDUCING *ESCHERICHIA COLI* K12 χ1776

Charles L. Hershberger, New Palestine, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 2, 1978, Ser. No. 911,852
Int. Cl.³ C12N *15/00*
U.S. Cl. 435—172 **3 Claims**



1. A method of transducing genetic markers into strains of *Escherichia coli* K12 χ1776 which comprises growing the *E. coli* culture to the stationary growth phase and then transduc-

ing said markers into said *E. coli* strain in the stationary growth phase.

4,322,498

CITRIC ACID PRODUCING MUTANT YEAST STRAINS

Kenichiro Takayama, Machida; Tetsuo Adachi, Tokyo; Mamoru Kohata, Kawasaki; Kiyoji Hattori, Machida, and Tomoko Tomiyama, Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 452,405, Mar. 18, 1974, Pat. No. 3,926,724. This application Oct. 16, 1974, Ser. No. 515,212

Int. Cl.³ C12N *1/16*

U.S. Cl. 435—255 **4 Claims**

1. A biologically pure culture of mutant yeast strain, *Candida zeylanoides* ATCC 20391, exhibiting growth substantially inferior to that of its parent strain in a minimum medium, but exhibiting growth comparable to that of its parent strain in a minimum medium including at least 0.1 mg/L of iron ion or iron-containing ion, said mutant being capable of producing citric acid.

4,322,499

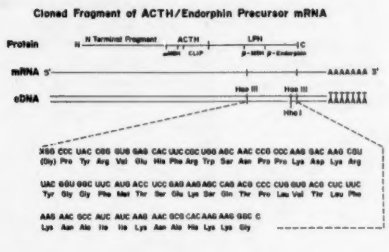
ADRENOCORTICOTROPIN-LIPOTROPIN PRECURSOR GENE

John D. Baxter; James L. Roberts; Peter H. Seeburg; Howard M. Goodman, all of San Francisco, Calif., and John Shine, Curtin, Australia, assignors to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 22, 1978, Ser. No. 972,430

Int. Cl.³ C12N *1/00*

U.S. Cl. 435—317 **8 Claims**



1. A recombinant DNA plasmid or bacteriophage transfer vector comprising a cDNA sequence comprising the endorphin gene cDNA sequence.

4,322,500

POTASSIUM FLUOROBORATE SILICATE GLASSES

Cyril F. Drake, Essex, England, assignor to International Standard Electric Corporation, New York, N.Y.

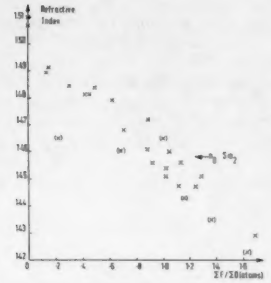
Filed May 30, 1980, Ser. No. 154,709

Claims priority, application United Kingdom, Jun. 12, 1979, 20465/79

Int. Cl.³ C03C *3/08, 3/18*

U.S. Cl. 501—77 **6 Claims**

1. A fluorine containing glass selected from the group consisting of potassium fluoroborate silicate and potassium alumino-fluoroborate silicate glass, which glass contains at least 20 mole % potassium computed as $K_2(O,F_2)$, at least 5 mole % silicon computed as $Si(O_2,F_4)$, at least 20 mole % boron computed as $B_2(O_3,F_6)$, not more than 5 mole % in aggregate of other glass modifying oxides and fluorides and not more than 5 mole % in aggregate of other glass forming oxides and fluorides, and wherein there are more fluorine atoms than oxygen atoms in the glass.



4,322,501

QUATERNIZATION PROCESS FOR ION EXCHANGE MEMBRANES

Cheng H. Lee, Wyckoff, N.J., and Jay M. S. Henis, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 22, 1980, Ser. No. 189,414

Int. Cl.³ B01J *41/12;* C08F *8/32*

U.S. Cl. 521—32 **19 Claims**

1. In a process for quaternizing reactive haloalkyl groups in a hollow fiber polymer membrane by reacting with an amine quaternizing agent, the improvement comprising reacting said haloalkyl groups with a solution containing from about 3 to about 50 weight percent of a tertiary amine quaternizing agent in the presence of from about 0.05 to about 10 weight percent of an electrolyte compound soluble in the solution, the reaction occurring at a temperature from about 0° C. to about 75° C.

4,322,502

SIMULTANEOUS EXPANSION AND CURE OF POLYESTER RESIN COMPOSITION

Paul E. Stott, Cheshire, and Edward L. Wheeler, Watertown, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Sep. 11, 1980, Ser. No. 186,099

Int. Cl.³ C08J *9/10*

U.S. Cl. 521—99 **27 Claims**

1. An expandable and curable polyester composition comprising a mixture of:

(a) a liquid ethylenically unsaturated polyester resin composition having an acid number from greater than 0 to 150;

(b) a peroxide;

(c) an organometallic promoter for the peroxide; and

(d) a hydrazine or hydrazone compound having the formula:

$$RNHNH_2 \text{ or } RNHN{=}CR^1R^2$$

wherein R is C_1–C_{18} alkyl, C_2–C_{18} alkenyl, C_5–C_6 cycloalkyl, C_7–C_9 aralkyl or substituted C_1–C_{18} alkyl, C_2–C_{18} alkenyl, C_5–C_6 cycloalkyl or C_7–C_9 aralkyl, the substituent being halogen, cyano, C_1–C_4 alkoxy or C_1–C_4 alkoxycarbonyl; R^1 and R^2 are the same or different and are C_1–C_{16} alkyl, C_2–C_{16} alkenyl, C_5–C_6 cycloalkyl, C_6–C_{10} aryl, C_7–C_9 aralkyl, C_7–C_9 alkaryl or substituted C_1–C_{16} alkyl, C_2–C_{16} alkenyl, C_5–C_6 cycloalkyl, C_6–C_{10} aryl, C_7–C_9 aralkyl or C_7–C_9 alkaryl, the substituent being halogen, cyano, C_1–C_4 alkoxy or C_1–C_4 alkoxycarbonyl, or one of R^1 or R^2 may be hydrogen, and R^1 and R^2 together with the common carbon atom may form C_3 to C_8 cycloalkyl or a bridged ring hydrocarbyl group having 7 to 10 carbon atoms.

4,322,503

FATTY ACID AMIDE NUCLEATING AGENTS FOR BUTENE-1 POLYMER COMPOSITIONS

Ananda M. Chatterjee, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 15, 1980, Ser. No. 216,055
Int. Cl.[3] C08K 5/20
U.S. Cl. 524—229 20 Claims

1. A method for promoting crystallization from the melt of an isotactic butene-1 homopolymer or isotactic butene-1-ethylene copolymer having no more than about 15 mole percent of ethylene, which comprises adding to a composition comprising the homopolymer or copolymer about 0.02 to 5.0% by weight of N,N'-ethylene-bis-stearamide or stearamide as crystallization nucleating agent.

4,322,504

RESIN BINDERS AND PROCESS FOR PREPARING THEM

Reinhard Wagner, Naurod; Gerhard Werner, Glashütten; Günther Hencken, Steinbach, and Christoph Just, Glashütten, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 724,003, Sep. 16, 1976, abandoned. This application Sep. 11, 1980, Ser. No. 186,137
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1975, 2541641; Aug. 28, 1976, 2638857; Sep. 23, 1976, 2639667
Int. Cl.[3] C08L 67/06
U.S. Cl. 525—7.1 18 Claims

1. An unsaturated polyester which comprises a reaction product of, in a first step,

(A) at least one compound selected from the group consisting of α,β-mono-olefinically unsaturated dicarboxylic acids, polycarboxylic acids free from polymerisable, carboncarbon multiple bonds and functional derivatives thereof

(B) at least one polyhydric alcohol, and

(C) at least one tricyclo-(5,2,1,$0^{2,6}$)-decane derivative in an amount of 0.5 to 30% by weight on the polyester resin, said tricyclo-(5,2,1,$0^{2,6}$)-decane derivative being substituted by hydroxyl, carboxy, or amino groups, to thereby form an intermediate polyester having reactive hydroxy or carboxyl groups and in a separate second stage,

(D) at least one acrylic compound containing hydroxy groups which is reacted through said hydroxy groups with the polyester intermediate products of components (A) to (C) and is selected from the group consisting of hydroxyl alkyl esters of acrylic acid, hydroxy alkyl esters of methyacrylic acid, both having up to three carbon atoms in the hydroxyalkyl group, N-alkylol-methacrylamides and N-alkylol-acrylamides, both containing up to four carbon atoms in the alkylol group in the presence of a polymerisation inhibitor in an amount of from 0.1 to 5%, referred to the weight of the reaction components (A) to (D) at a temperature in the range from 70° to 120° C.

4,322,505

REACTIVE POLYESTER RESIN-PLASTICIZER COMPOSITION

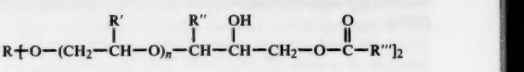
Eugene F. Jacobs, Tulsa, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 923,938, Jul. 13, 1978, abandoned. This application Oct. 20, 1980, Ser. No. 198,556
Int. Cl.[3] C08L 67/06; C08E 265/04
U.S. Cl. 525—44 15 Claims

1. A composition comprising the combination of

(a) a polyester resin having ethylenically unsaturated terminal groups; and

(b) a resinous reactive plasticizer of the formula



wherein R is the residue of an alkylene glycol, wherein R' and R'' are individually H or lower alkyl, wherein each n is an integer of from 1 to 15, and wherein R''' is the radical of an α, β ethylenically unsaturated carboxylic acid of the formula R'''COOH.

4,322,506

POLYPHENYLENE OXIDE/RUBBER BLENDING

Kent W. Rollmann, Bartlesville, Okla., assignor to Phillips Petroleum Co., Bartlesville, Okla.

Filed Dec. 26, 1979, Ser. No. 106,989
Int. Cl.[3] C08L 53/02, 71/04
U.S. Cl. 525—92 6 Claims

1. A process for mixing polyphenylene oxide and conjugated diene-monovinylarene copolymer containing one or more blocks of polymerized monovinylarene comprising

mixing a polymer cement, polyphenylene oxide and an aromatic solvent and

recovering a polymer blend from the polymer solution so obtained;

wherein said polymer cement comprises a solution of said conjugated diene-monovinylarene copolymer in a paraffinic or cycloparaffinic solvent;

wherein said polymer cement is obtained from a solution polymerization process in which conjugated diene and monovinylarene have been polymerized; and

wherein the weight ratio of aromatic solvent to paraffinic or cycloparaffinic solvent is greater than or equal to 1:9 if said conjugated diene-monovinylarene copolymer is unhydrogenated, and is greater than or equal to 1:4 if said conjugated diene-monovinylarene copolymer is hydrogenated.

4,322,507

MOLDED ARTICLE OF POLYPHENYLENE ETHER AND HYDROGENATED BLOCK COPOLYMER

William R. Haaf, Voorheesville, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Mar. 13, 1980, Ser. No. 129,986
The portion of the term of this patent subsequent to Sep. 11, 1996, has been disclaimed.
Int. Cl.[3] C08L 51/00
U.S. Cl. 525—92 11 Claims

1. A three dimensional article substantially free of lamination comprised of a thermoplastic composition comprising

(a) from 10 to 99 parts by weight of a polyphenylene ether resin or a polyphenylene ether resin in combination with a styrene homopolymer or random copolymer resin; and

(b) from 1 to 90 parts by weight of a hydrogenated block copolymer of the A-B-A type where A is a polymerized monoalkenyl aromatic hydrocarbon block having an average molecular weight of greater than about 15,000 and B is a polymeric diene block having an average molecular weight of about 50,000–450,000, block B having had its unsaturation reduced to less than 10% of the original unsaturation.

4,322,508

HIGH SOLIDS PAINT COMPOSITION COMPRISING HYDROXY FUNCTIONAL OLIGOESTERS AND HYDROXY FUNCTIONAL COPOLYMERS

Stephen C. Peng, Utica, and David M. Thomson, Mt. Clemens, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 41,207, May 21, 1979, abandoned, and a continuation-in-part of Ser. No. 852, Jan. 4, 1979, abandoned, which is a continuation-in-part of Ser. No. 888,064, Mar. 20, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,705

Int. Cl.³ C08G *12/30*

U.S. Cl. 525—110 **43 Claims**

1. A high solids, thermosetting coating composition which, exclusive of pigments, solvents and other nonreactive components, consists essentially of:

(A) A hydroxy functional component consisting of:

(1) between about 1 and about 90 weight percent of one or more oligoesters

(i) having a number average molecular weight ($\overline{M}_n$) of between about 150 and about 3000,

(ii) bearing at least 2 hydroxyl groups per molecule, and

(iii) being formed by an esterification reaction between a carboxylic acid and an epoxide; and

(2) between about 99 and about 10 weight percent of a hydroxy functional copolymer having a number average molecular weight ($\overline{M}_n$) of between about 500 and 15,000, said hydroxy functional copolymer being formed from about 10 to about 50 weight percent of hydroxy functional monoethylenically unsaturated monomers selected from the group consisting of hydroxy bearing aliphatic alcohol esters of acrylic and methacrylic acids, and a remainder of other monoethylenically unsaturated monomers; and

(B) A crosslinking agent capable of reacting with hydroxy functionality of said hydroxyl functional component.

4,322,509

FAST CURING PHOSPHATE MODIFIED ANAEROBIC ADHESIVE COMPOSITIONS

Denis J. Zalucha, Waterford, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Oct. 3, 1980, Ser. No. 193,854

Int. Cl.³ C08F *4/34, 30/02, 130/02, 230/02*

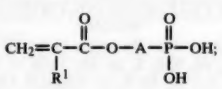
U.S. Cl. 525—287 **6 Claims**

1. An anaerobic adhesive and sealant composition comprising

(a) at least one anaerobically polymerizable material having at least one acrylic or substituted acrylic unsaturated group;

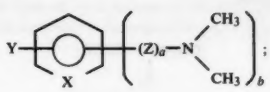
(b) at least one organic peroxide;

(c) at least 0.05 percent by weight, based on weight of anaerocially polymerizable material, of at least one organic monoester of phosphoric acid having the formula



wherein R^1 is selected from the group consisting of hydrogen, halogen, an alkyl group having from 1 to 8 carbon atoms and $CH_2{=}CH{-}$; A is selected from the group consisting of $-R^2O-$ and $(R^3O)_n$, wherein R^2 is an aliphatic or cycloaliphatic group having from 1 to 9 carbon atoms, r^3 is an alkylene group having from 1 to 7 carbon atoms, and n is an integer from 2 to 10;

(d) at least 0.01 percent by weight, based on total weight of said anaerobically polymerizable adhesive and sealant composition, of at least one tertiary amine having the formula



wherein Z is methylene; X is a carbon or nitrogen atom; Y is selected from the group consisting of hydrogen, hydroxy, amino, alkyl of 1 to 8 carbon atoms, and alkoxy having from 1 to 8 carbon atoms; a is zero or 1; and b is 1 or 2; and

(e) an effective amount, based on total weight of anaerobically polymerizable material of at least one carboxylated nitrile elastomer consisting essentially of interpolymers of 1,3-butadiene, acrylonitrile and a carboxyl-containing monomer.

4,322,510

NITRILE BARRIER RESINS AND PROCESS FOR THEIR MANUFACTURE

William J. Miloscia, Shaker Heights; John A. Turnbaugh, Cleveland, and Brandford E. Giddings, Warrensville Heights, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

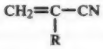
Continuation of Ser. No. 770,921, Feb. 22, 1977, abandoned. This application Oct. 15, 1980, Ser. No. 197,316

Int. Cl.³ C08F *279/02*

U.S. Cl. 525—310 **4 Claims**

1. The process comprising polymerizing in an aqueous medium at a temperature of from 0° to 100° C. in the presence of a free-radical polymerization initiator a polymerization mixture of 100 parts by weight of

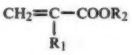
(A) from 70 to 90% by weight of at least one nitrile having the structure



wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen,

(B) from 2 to 28% by weight of at least one member selected from the group consisting of

(1) an ester having the structure

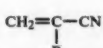


wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms, and

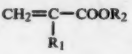
(2) a vinyl ester selected from the group consisting of vinyl acetate, vinyl propionates, vinyl butyrates, isopropenyl acetate, isopropenyl propionates, and isopropenyl butyrates, and

(C) from 28 to 2% by weight of styrene, wherein the sum of (A) plus (B) plus (C) is always 100% in the presence of from 1 to 40 parts by weight of

(D) a rubbery polymer of from 50 to 100% by weight of at least one member selected from the group consisting of butadiene and isoprene and from 0 to 50% by weight of at least one monomer selected from the group consisting of a nitrile having the structure



wherein R has the foregoing designation, an ester having the structure



wherein R_1 and R_2 have the foregoing designations, and styrene,

wherein (A), (B) and (D) are all charged initially to the polymerization mixture and (C) is added continuously to the polymerization mixture during the course of the polymerization.

4,322,511

PROCESS OF HYDROLYZING FLUORINE-CONTAINING MULTI-COMPONENT COPOLYMERS

Osamu Matsuda; Terutaka Watanabe, both of Takasaki; Yoneho Tabata, Tokyo, and Sueo Machi, Takasaki, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

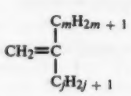
Division of Ser. No. 85,328, Oct. 16, 1979, Pat. No. 4,294,675. This application Jun. 12, 1980, Ser. No. 158,824

Claims priority, application Japan, Oct. 18, 1978, 53-128206; Mar. 20, 1979, 54-32962; Mar. 20, 1979, 54-32963; Apr. 27, 1979, 54-52278

Int. Cl.³ C08F *8/12, 214/18, 8/00*

U.S. Cl. 525—344 **57 Claims**

1. A process for the production of a fluorine-containing interpolymer of regular repeating sequential alternating structure $-A_1-B_1-A_2-B_2-A_3-B_3-$ having ion exchange groups characterized in that a terpolymer or a multi-component copolymer comprising four or more component monomers; or a crosslinked copolymer of said terpolymer or said multi-component copolymer; is subjected to hydrolyzing treatment, said terpolymer or said multi-component copolymer comprising tetrafluoroethylene; up to 60 mole % of one or more α, β, β-trifluoroacrylate having the generic formula $CF_2{=}CFCOOC_nH_{2n+1}$ wherein n represents an integer of 1–4; and from 10–90 mole % of one or more α-olefin having the generic formula:



wherein j and m each independently represents an integer of 0 through 11 inclusive, and wherein A_1, A_2 and A_3 represent said α-olefin and B_1, B_2 and B_3 represent said tetrafluoroethylene and said α,β,β-trifluoroacrylate.

4,322,512

PROCESS FOR TREATING POLYAMIDE TEXTILE MATERIALS WITH TRIMELLITIC ANHYDRIDE COMPOUND

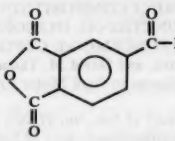
Ronald S. Lenox, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Jul. 23, 1980, Ser. No. 171,299

Int. Cl.³ C08G *69/48;* **D06M** *13/20*

U.S. Cl. 525—420 **8 Claims**

1. A process for increasing the cationic dye uptake of a polyamide textile material which is normally susceptible to acid dyes which comprises reacting the polyamide material with a trimellitic anhydride compound having the formula



wherein R represents halogen or a ring nitrogen atom-containing heterocylic radical containing 5 to 15 ring atoms, wherein said radical is directly bonded to the carbonyl carbon by a ring nitrogen atom, in an inert solvent for the trimellitic anhydride compound.

4,322,513

EPOXY RESIN-BASED COMPOSITIONS

Moriyasu Wada, Kanagawa; Shuichi Suzuki, Yokohama; Takeo Ito, Kawasaki, and Shuzi Hayase, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 17, 1980, Ser. No. 160,290

Claims priority, application Japan, Jun. 25, 1979, 54-79059

Int. Cl.³ C08G *59/68, 59/70*

U.S. Cl. 525—507 **12 Claims**

1. An epoxy resin-based composition, comprising:

an epoxy resin; and

a catalytic amount of a latent curing catalyst comprising:

(a) at least one organosilicon compound having at least one hydrolyzable group bonded directly to silicon, said organosilicon compound being selected from the group consisting of organosilanes and organosiloxanes; and

(b) at least one aluminum compound being an alkoxide, a phenoxide, an acyloxide or chelate of aluminum or mixtures thereof.

4,322,514

PROCESS FOR PREPARING A COPOLYMER

Mituji Miyoshi, Kanagawa; Kazuo Matsuura, Kawasaki, and Yoshio Tajima, Tokyo, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Feb. 20, 1980, Ser. No. 122,987

Claims priority, application Japan, Feb. 27, 1979, 54/21444

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—124 **11 Claims**

1. A process for preparing a non- or low-crystalline soft polymer, characterized in that 80 to 98 mol % of propylene, 0.2 to 15 mol % of ethylene and 0.2 to 15 mole % of a straight-chained α-olefin having not less than four carbon atoms are copolymerized using an electron donor free catalyst comprising (1) a solid substance containing magnesium and titanium and (2) organometallic compound.

4,322,515

PROCESS FOR PREPARING POLYMERIC PETROLEUM RESINS

Sakhib M. O. Aliev, ulitsa Barinova, 12, kv. 31; Vagab S. Aliev, ulitsa Nizami, 66, blok 5, kv. 40; Tofik A. Gadzhiev, ulitsa Malygina, 17, kv. 16; Ali R. O. Ismailov, Chkalovsky pereulok, 7, kv. 8; Arif I. O. Gasanov, ulitsa Polukhina, 150, kv. 25, and Vagif B. G. O. Guseinov, ulitsa Meskheti, 4, kv. 2, all of Baku, U.S.S.R.

Filed Jan. 18, 1980, Ser. No. 113,195

Int. Cl.³ C08F *210/00, 236/00*

U.S. Cl. 526—213 **10 Claims**

1. A process for preparing polymeric petroleum resins, comprising:

(a) polymerizing fractions of liquid pyrolzates of petroleum hydrocarbons, said fractions having boiling point of 10° to 190° C., including heating a reaction mixture of (1) said fractions and (2) a polymerization initiator in an amount of

0.2 to 2.0% by weight of the reaction mixture, which initiator comprises at least one organic peroxide compound and at least one metal salt of an organic carboxylic acid in a weight ratio of the organic peroxide compound to the metal salt of an organic acid of 1:1 to 19:1, said metal salt comprising at least one metal selected from the group consisting of an alkali metal, an alkali-earth metal, and a metal with more than one oxidation state; and

(b) subsequently separating and recovering a polymeric petroleum resin end product.

4,322,516
COPOLYMERS FOR PRESSURE-SENSITIVE ADHESIVES BASED ON ACRYLIC ESTERS, (METH)ACRYLAMIDE VINYL ACETATE AND ETHYLENE

Hubert Wiest; Rudolf Weissgerber, and Erwin Lieb, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 19, 1980, Ser. No. 131,785

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1979, 2915887

Int. Cl.³ C08F *210/02*

U.S. Cl. 526—307.7 **10 Claims**

1. A copolymerizate containing:

(a) from 10% to 30% by weight of ethylene monomeric units,

(b) from 29% to 69% by weight of monomeric units of an acrylic acid ester of an alkanol having from 4 to 12 carbon atoms,

(c) from 20% to 55% by weight of vinyl acetate monomeric units,

(d) from 0.2% to 8% by weight of monomeric units having the formula:

$$CH_2{=}CR'{-}\overset{\overset{O}{\|}}{C}{-}N(R'')_2$$

wherein R′ is a member selected from the group consisting of hydrogen and methyl, and R″ is hydrogen, and

(e) from 0 to 12% by weight of other olefinically-unsaturated monomeric units copolymerizable with ethylene, vinyl acetate and alkyl acrylate and monomers as described in (d), said copolymerizate having a glass transition temperature of from −20° C. to −60° C. and a K-value according to Fikentscher, measured in tetrahydrofuran, of from 50 to 180.

4,322,517
HYDROPHILIC, CROSSLINKED, MODIFIED ORGANOPOLYSILOXANES AND PROCESS FOR PREPARING THE SAME

Bernward Deubzer, Burghausen; Jürgen Burkhardt, Winhoring, both of Fed. Rep. of Germany; Erich Brünner, Gmunden, Austria, and Konrad Sallersbeck, Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 17, 1980, Ser. No. 141,874

Claims priority, application Fed. Rep. of Germany, May 2, 1979, 2917754

Int. Cl.³ C08G *77/06*

U.S. Cl. 528—14 **16 Claims**

1. Hydrophilic crosslinked modified organopolysiloxanes which are obtained from the polymerization of at least one polymerizable monomer selected from the group consisting of hydroxyalkylmethacrylate and hydroxyalkylacrylate in the presence of an organopolysiloxane which is soluble in the polymerizable monomer and has a molecular weight of at least 1,000, in which the organic groups of the organopolysiloxane are selected from the group consisting of hydrocarbon radicals, halogenated hydrocarbon radicals and mixtures thereof, said organopolysiloxane is crosslinked by condensation or by the addition of Si-bonded hydrogen to Si-bonded alkenyl groups and at least 40 mol percent of the siloxane units of the organopolysiloxane are monoorganosiloxane units.

4,322,518
CURABLE SILICONE COMPOSITIONS COMPRISING LIQUID RESIN AND USES THEREOF

John D. Blizzard, Bay City, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 2, 1980, Ser. No. 212,189

Int. Cl.³ C08G *77/06*

U.S. Cl. 528—15 **14 Claims**

1. A composition comprising

(I) a liquid copolymeric organopolysiloxane, prepared by a method comprising

(A) forming a homogeneous mixture having an acid number greater than zero and comprising

(a) an organic solvent solution of a resinous copolymeric siloxane containing silicon-bonded hydroxyl radicals and consisting essentially of $R_3SiO_{\frac{1}{2}}$ siloxane units and $SiO_{4/2}$ siloxane units wherein the ratio of the number of said $R_3SiO_{\frac{1}{2}}$ siloxane units to the number of said $SiO_{4/2}$ siloxane units has a value of from 0.6/1 to 0.9/1 and each R denotes, independently, a monovalent hydrocarbon radical and

(b) a liquid organohydrogenpolysiloxane wherein each organic radical is, independently, a monovalent hydrocarbon radical, there being an average of at least one silicon-bonded hydrogen radical per molecule of said organohydrogenpolysiloxane, and

(B) heating said homogeneous mixture to remove substantially all of said organic solvent therefrom and

(II) a polydiorganosiloxane having the formula

$$ZR'''_2SiO(R'''_2SiO)_cSiR'''_2Z$$

wherein Z denotes hydroxyl or R‴ and each R‴ denotes independently, a monovalent hydrocarbon radical, there being an average of at least two vinyl radicals or silicon-bonded hydroxyl radicals per molecule and c has a value sufficient to provide a viscosity of from 0.1 to 10,000 Pa·s at 25° C. for the polydiorganosiloxane.

4,322,519
METHOD OF PRODUCING POLYURETHANES

Koreyoshi Suenobu, Buzen; Masanori Kohara, Nakatsu; Kazuki Katsuyama, and Ryoichi Kinishi, both of Nara, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed Dec. 1, 1980, Ser. No. 212,042

Claims priority, application Japan, Nov. 30, 1979, 54-155845; Jun. 18, 1980, 55-83317; Aug. 15, 1980, 55-112794

Int. Cl.³ C08G *18/80, 18/14, 18/24;* C07F *7/22*

U.S. Cl. 528—45 **7 Claims**

1. In a method of producing polyurethanes by reacting an at least partially blocked isocyanate compound with an active hydrogen-containing compound under heating in the presence of an organotin catalyst, the improvement which comprises using as the organotin catalyst a monoorganotin compound selected from the group consisting of a mono-$C_{1\text{-}8}$-alkyltin oxide, a mono-$C_{1\text{-}8}$-alkyltin monocarboxylate, a mono-$C_{1\text{-}8}$-alkyltin sulfide and monophenyltin oxide.

4,322,520
AROMATIC THERMOPLASTIC POLYPHOSPHONATOCARBONATE

Manfred Schmidt, New Martinsville, W. Va.; Ludwig Bottenbruch, Krefeld, Fed. Rep. of Germany; Dieter Freitag, Krefeld, Fed. Rep. of Germany, and Werner Nouvertne, Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 18, 1980, Ser. No. 160,644

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925208

Int. Cl.³ C08G *63/62*

U.S. Cl. 528—167 4 Claims

1. A process for preparing an aromatic, thermoplastic polyphosphonatocarbonate which comprises polycondensing (a) at least one aromatic dihydroxy compound having 6 to 30 carbon atoms with (b) a diaryl carbonate having 6 to 14 carbon atoms in each aryl moiety and (c) a phosphonic acid diaryl ester having 6 to 14 carbon atoms in each aryl moiety in the pressure of a catalytic amount of a basic polycondensation catalyst at a temperature of from 80° to 340° C. and under a pressure of from 600 to 0.1 mm Hg in an inert gaseous atmosphere, the molar ratio of (b) to (c) being from 5:95 to 95:5 and the molar ratio of (a) to the sum of (b) and (c) being from 0.91:1 to 0.99:1, and following polycondensation, neutralizing said basic catalyst.

4,322,521
PROCESS FOR PRODUCING HALOGENATED AROMATIC POLYESTERS

Albert G. Williams, West Orange, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 19, 1980, Ser. No. 208,366

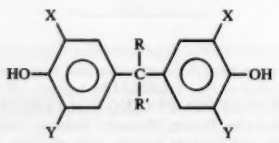
Int. Cl.³ C08G *63/68, 63/70*

U.S. Cl. 528—182 14 Claims

1. A process for producing a halogenated aromatic polyester which comprises

(a) reacting in solution in the presence of an excess amount of a tertiary amine

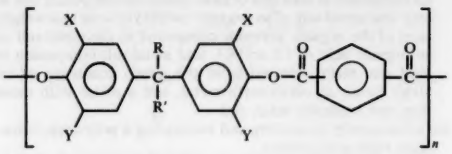
(1) a bisphenol having the structural formula



wherein X is chlorine or bromine and Y is hydrogen, chlorine or bromine, with the provision that when X is chlorine, Y is hydrogen or chlorine and when X is bromine, Y is hydrogen or bromine, R and R′ may be the same or different and represent hydrogen, lower alkyl groups, or together constitute a cyclic hydrocarbon group, with

(2) an aromatic acid halide selected from the group consisting of terephthaloyl halide, isophthaloyl halide, and mixtures thereof

to form a reaction mixture comprising solvent, tertiary amine hydrochloride, unreacted tertiary amine, and a halogenated aromatic polyester having the recurring structural formula:



wherein X, Y, R and R′ have the same meanings as above and n is an integer which is at least about 10,

(b) adding to said reaction mixture an amount of gaseous substantially anhydrous hydrogen chloride sufficient to substantially completely neutralize the unreacted tertiary amine, and

(c) recovering the halogenated aromatic polyester.

4,322,522
POLYESTER/POLYETHER SEGMENTED COPOLYMERS STABILIZED AGAINST DEGRADATION BY UV LIGHT VIA COPOLYMERIZATION WITH ANALOGS OF 2,2,6,6-TETRAMETHYLPIPERIDINE DERIVATIVES

David A. Johnson, Norton, Mass.; Robert L. Gilly, and Kenneth B. Wagener, both of Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.

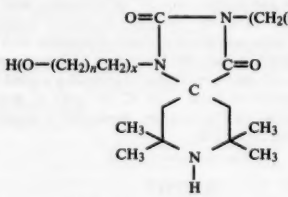
Filed Jul. 8, 1980, Ser. No. 164,043

Int. Cl.³ C07D *487/10;* C08G *63/16*

U.S. Cl. 528—289 7 Claims

1. A polyester/polyether segmented copolymer stabilized against deterioration caused by ultraviolet light by the copolymerization into the copolymer of a stabilizing amount of one or more stabilizing comonomers selected from the group consisting of:

compounds having a formula



wherein n is an integer from 1 to 4 and the sum of x plus y ranges from 2 to 30.

4,322,523
METHYLOLATED MONO- AND OLIGOSACCHARIDES

Kuno Wagner, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,241

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833138

Int. Cl.³ C07H *15/04, 1/00*

U.S. Cl. 536—4 46 Claims

1. A derivative of a reducing sugar other than ribose, said reducing sugar having a molecular weight of from 120 to 2000, said derivative having at least one methylol group which branches the carbon structure of the reducing sugar in the α-position, the α′-position, or both the α- and α′-position to the carbonyl group or cyclohemiacetal group of the reducing sugar.

4,322,524

CYANOETHYLPULLULAN

Yoshiro Onda; Hiroaki Muto, both of Joetsu, and Hiroshi Suzuki, Niigata, all of Japan, assignors to Shin-Etsu Chemical Co. Ltd., Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,269
Claims priority, application Japan, Jul. 23, 1979, 54-93557
Int. Cl.³ C08B *37/00*
U.S. Cl. 536—55 **2 Claims**

1. A cyanoethylpullulan.

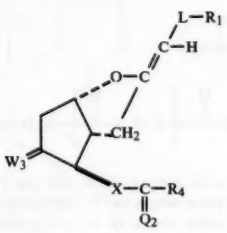
4,322,525

PGI_2 11,15-ETHER INTERMEDIATES

Roy A. Johnson, Kalamazoo; Frank H. Lincoln, Portage, and John E. Pike, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 819,940, Jul. 28, 1977, which is a continuation-in-part of Ser. No. 725,550, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,770, Aug. 23, 1976, abandoned. This application Oct. 27, 1980, Ser. No. 200,699
Int. Cl.³ C07D *307/935*
U.S. Cl. 542—421 **1 Claim**

1. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof,

wherein W_3 is α-OR_{33}:β-H, α-H:β-OR_{33}, or α:CH_2OR_{33}:β-H, wherein R_{33} is

(a) tetrahydropyranyl,

(b) tetrahydrofuranyl,

(c) a group of the formula $-C(OR_{14})(R_{15})-CH(R_{16})(R_{17})$, wherein R_{14} is alkyl of one to 18 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, wherein R_{15} and R_{16} are the same or different, being hydrogen, alkyl of one to 4 carbon atoms, inclusive, phenyl or phenyl substituted with one, 2, or 3 alkyl or one to 4 carbon atoms, inclusive, or, when R_{15} and R_{16} are taken together, —(CH_2)a— or —(CH_2)b—O—(CH_2)c, wherein a is 3, 4, or 5, b is one, 2, or 3, and c is one, 2, or 3 with the proviso that b plus c is 2, 3, or 4, and wherein R_{17} is hydrogen or phenyl, or

(d) carboxyacyl including

(a') —CO—(Ph II), wherein (Ph II) is phenyl optionally substituted by one-5 is alkyl of one to 4 carbon atoms, inclusive, bromo, phenylalkyl of 7 to 10 carbon atoms, inclusive, or nitro, provided that not more than two such substituents are other than alkyl, and that the total number of carbon atoms, in the substituents does not exceed 10 carbon atoms,

(') —CO—(Ph III), wherein (Ph III) is phenyl substituted by —$COOR_{30}$, wherein R_{30} is alkyl of one to 4 carbon atoms, inclusive,

(c') —CO—(Np I), wherein (Np I) is naphthyl optionally substituted as is (Ph II)

(d') —CO—R_{31}, wherein R_{31} is alkyl of one to 7 carbon atoms, inclusive,

wherein L is

(1) —$(CH_2)_d$—$C(R_2)_2$—,

(2) —CH_2—O—CH_2—Y—, or

(3) —CH_2CH=CH—,

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one of R_2 is not methyl when the other is fluoro, and Y is a valence bond, —CH_2—, or —$(CH_2)_2$—,

wherein Q_2 is oxo, α-H:β-H, α-OR_{33}:β-R_8, or α-R_8:β-OR_{33}, wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive, and R_{33} is as defined above.

wherein R_1 is

(1) —$COOR_3$,

(2) —CH_2OH,

(3) —$CH_2N(R_9)(R_{18})$,

(4) —CO—$N(R_9)(R_{18}$) or

(5) tetrazolyl, wherein R_3 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive,

(g) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,

(h) —(p-Ph)—NH—CO—(Ph),

(i) —(p-Ph)—NH—CO—CH_3,

(j) —(p-Ph)—NH—CO—NH_2,

(k) —(p-Ph)—CH=N—NH—CO—NH_2,

(l) 2-naphthyl,

(m) $CH(R_{11})$—CO—R_{10}, wherein R_{10} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, wherein R_{11} is hydrogen or benzoyl, (Ph) is phenyl and (p-Ph) is 1,4-phenylene or

(n) a pharmacologically acceptable cation;

wherein R_9 is hydrogen, methyl, or ethyl, and wherein R_{18} is hydrogen, alkyl of one to 4 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with alkyl of one to 4 carbon atoms, inclusive,

wherein R_4 is

—$C(R_5)$ $(R_6)C_gH_{2g}$—CH_3,

—C (R_5) (R_6)—Z—(PH I), or

—CH_2—CH=CH—CH_2CH_3,

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —CR_5R_6 and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} where in C_jH_{2j} is a valence bond or alkylene or one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6—and (Ph I); wherein (Ph I) is phenyl optionally substituted by one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_7— wherein R_7 is alkyl to one to 4 carbon atoms, inclusive, with the proviso that not more than two such substituents are other than alkyl and such substituents being either the same or different; and

wherein X is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) —C≡C—, or

(4) —CH_2CH_2—;

including the lower alkanoates thereof.

4,322,526

PROCESS FOR PRODUCING 7-AMINOCEPHALOSPORANIC ACID

Gerd Ascher, Wörgl, Austria, assignor to Sandoz Ltd., Basel, Switzerland

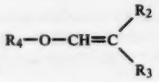
Division of Ser. No. 114,154, Jan. 22, 1980, Pat. No. 4,267,321. This application Dec. 29, 1980, Ser. No. 220,830

Claims priority, application Austria, Jan. 25, 1979, 531/79

Int. Cl.³ C07D 501/04

U.S. Cl. 544—030 **2 Claims**

1. In a process for the preparation of 7-ACA or a protected derivative thereof from cephalosporin C, which comprises protecting the free amino group in the 7-adipamyl side chain and deacylating the resulting protected cephalosporin C, the improvement which comprises reacting the free amino group in the 7-adipamyl side chain with a compound of the formula III



wherein

R_2 and R_3 each independently represent hydrogen, nitro, cyano or lower alkoxy carboxyl and

R_4 is lower alkyl.

4,322,527

6-AMINO-DIBENZ[D,G][1,3,2]DIOXAPHOSPHOCINES

Michael Rasberger, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

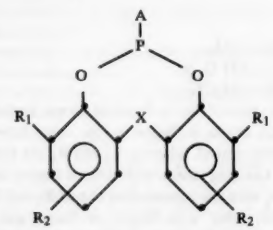
Filed May 5, 1980, Ser. No. 146,974

Claims priority, application Switzerland, May 15, 1979, 4504/79

Int. Cl.³ C07F 9/24

U.S. Cl. 544—157 **13 Claims**

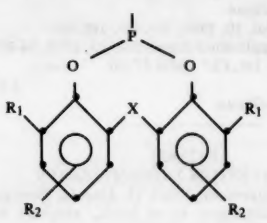
1. A compound of formula I



(I)

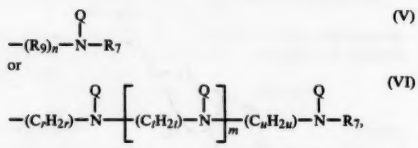
wherein R_1 is hydrogen, C_1–C_8 alkyl, C_5–C_{12} cycloalkyl, phenyl or C_7–C_9 phenylalkyl and R_2 is hydrogen or C_1–C_{18} alkyl, or, if R_1 is hydrogen, R_2 is a divalent 1,1,3,3-tetramethylpropylene radical fused in the 2-position and 3-position or the 9-position and 10-position, and X is a group —CH(R_3)—, in which R_3 is hydrogen or a radical of the formula II —(CH(R_4)—CH(R_5)SR_6, and each of R_4 and R_5 independently is hydrogen or C_1–C_6 alkyl and R_6 is C_1–C_{20} alkyl, while the alkyl group can be interrupted by one or more sulfur atoms, and

A is a group —N(R_7)R_8 (IV), in which R_7 is hydrogen, C_1–C_{22} alkyl, C_2–C_{21} oxa- or thiaalkyl, C_3–C_{18} alkenyl, C_3–C_{18} alkynyl, C_2–C_6 hydroxyalkyl, C_3–C_{24} alkoxycarbonylalkyl, C_5–C_{12} cycolalkyl, C_6–C_{14} aryl, C_7–C_{15} alkaryl, C_7–C_{15} aralkyl, a substituted or unsubstituted C_5–C_7 piperidin-4- or -1-yl group or a group of the formula III



(III)

in which R_1, R_2 and X are as defined above, and R_8 is C_1–C_{22} alkyl, C_2–C_{21} oxa- or thiaalkyl, C_3–C_{18} alkenyl, C_3–C_{18} alkynyl, C_2–C_6 hydroxyalkyl, C_3–C_{24} alkoxycarbonylalkyl, C_5–C_{12} cycloalkyl, C_6–C_{14} alkaryl, C_7–C_{15} aralkyl, a substituted or unsubstituted C_5–C_{17} piperidin-4-yl group or a group of the formula

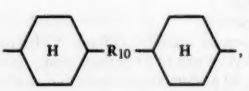


(V)

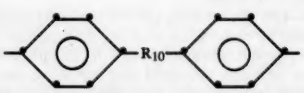
or

(VI)

in which R_7 is as defined above and n is 0 or 1, and R_9 is C_2–C_{22} alkylene which can be interrupted by one or two oxygen or sulfur atoms, or is C_4–C_{22} alkenylene, C_4–C_{22} alkynylene, C_5–C_9 cycloalkylene or a group of the formula VII



in which R_{10} is —O—, —S— or —(R_{11})C(R_{12})—, in which each of R_{11} and R_{12} independently is hydrogen or C_1–C_8 alkyl, or R_{11} and R_{12} together with the carbon atom to which they are attached form C_5–C_{12} cycloalkyl; and R_9 is also phenylene, biphenylene or a group of the formula VIII



in which R_{10} is as defined above, and each or r, t and u independently is 2, 3, 4, 5 or 6 and m is 0, 1, 2 or 3, and Q is a group of the formula III, in which R_1, R_2 and X are as defined above, or R_7 and R_8 together with the nitrogen atom to which they are attached are also substituted or unsubstituted pyrrolidine, oxazolidine, piperidine or morpholine, or R_7 and R_8 together form the radical —CH-2—CH_2—N(Q)—CH_2—CH_2—, in which Q is as defined above.

4,322,528

POLYCYCLIC CHLORINATED HYDROCARBONS CONTAINING BRIDGEHEAD OR IMINO NITROGEN

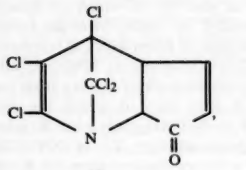
John L. Wong, Louisville, Ky., assignor to Research Corporation, New York, N.Y.

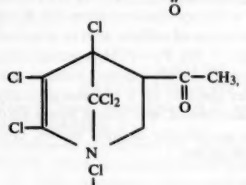
Division of Ser. No. 7,979, Jan. 31, 1979, Pat. No. 4,228,078, which is a division of Ser. No. 878,794, Feb. 17, 1978, Pat. No. 4,182,884, which is a division of Ser. No. 725,578, Sep. 22, 1976, Pat. No. 4,087,434. This application Dec. 27, 1979, Ser. No. 107,514

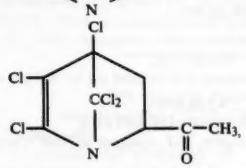
Int. Cl.[3] C07D *487/22*

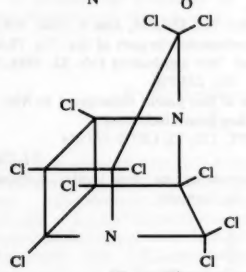
U.S. Cl. 544—338 6 Claims

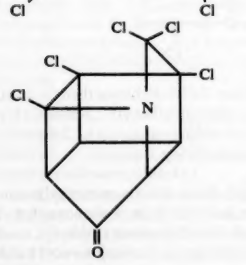
1. A compound of the formula selected from the group consisting of











or the aluminum chloride complex thereof, and

4,322,529

TERTIARY-ALKYLAMINE SALTS OF AZINE DYESTUFFS

Werner Kuster, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

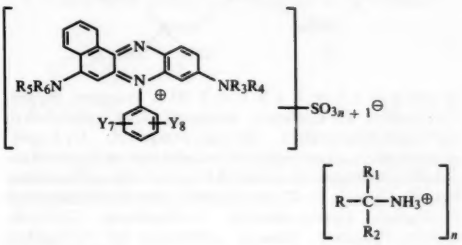
Continuation of Ser. No. 723,700, Sep. 16, 1976, abandoned, which is a division of Ser. No. 548,506, Feb. 10, 1975, Pat. No. 3,994,872, which is a continuation of Ser. No. 277,948, Aug. 4, 1972, abandoned. This application Nov. 16, 1977, Ser. No. 851,924

Claims priority, application Switzerland, Aug. 10, 1971, 11730/71; Oct. 11, 1971, 14804/71

Int. Cl.[3] C09B *17/00, 17/02, 17/04;* D06P *3/24*

U.S. Cl. 544—343 2 Claims

1. An azine dyestuff salt of the formula



R_3, R_5, Y_7 and Y_8 represents hydrogen, alkyl containing 1–6 carbon atoms; R_4 and R_6 represent alkyl containing 1–6 carbon atoms, phenyl, benzyl, benzyl substituted by alkyl containing 1–6 carbon atoms, alkoxy containing 1–6 carbon atoms, or alkylamino containing 1–6 carbon atoms; n denotes the number 1 or 2; and R, R_1 and R_2 denote alkyl containing a total of 10–24 carbon atoms.

4,322,530

ALKYLATION OF POLYAMINES

Felek Jachimowicz, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Feb. 22, 1980, Ser. No. 123,823

Int. Cl.[3] C07D *241/04, 295/00, 211/00;* C07C *85/18*

U.S. Cl. 544—403 5 Claims

1. A process of alkylating a polyamine comprising contacting, in a liquid media, a mixture of a polyamine having the formula:

$$R^1NH—(R^3—NH)_xR^2$$

wherein R^1 and R^2 each represent hydrogen of a hydrocarbyl radical, R^3 represents an alkylene radical and x is a whole integer, an olefin having the formula:

$$R^4CH=CR^5R^6$$

wherein R^4, R^5 and R^6 each represent hydrogen, hydrocarbyl or a substituted hydrocarbyl, carbon monoxide and water as the hydrogen source wherein the reactants in the reaction mixture are present in amounts such that the molar ratio of olefinic groups to amino groups is at least 1:1, the molar ratio of the hydrogen source to the amino groups is from 1:10 to 10:1; and the molar ratio of carbon monoxide to hydrogen source is at least about 3:1; heating said mixture to a temperature of from about 50° to 250° C. under a pressure of from about 30 to about 300 atmospheres in the presence of a catalytic amount of a rhodium atom containing compound selected from metallic rhodium, rhodium salt, rhodium carbonyl, rhodium oxide and ligands thereof for a sufficient period of time to cause the formation of alkylated polyamine product; and recovering the alkylated polyamine product.

4,322,531
DIAZAPHOSPHOLANES AND DIAZAPHOSPHORINANES

Friedrich Karrer, Zofingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

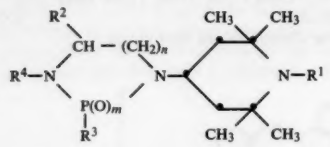
Filed Sep. 18, 1980, Ser. No. 188,400

Claims priority, application Switzerland, Sep. 27, 1979, 8720/79

Int. Cl.³ C07D *211/58*

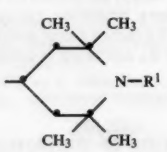
U.S. Cl. 546—22 **4 Claims**

1. A compound of the formula I



(I)

in which m is 0 or 1, n is 1 or 2, R^1 is hydrogen, oxygen, C_1–C_{12}alkyl, C_3–C_5alkenyl, propargyl, C_7–C_{11}phenylalkyl, C_8–C_{15}alkylphenylalkyl, C_2–C_4hydroxyalkyl, C_4–C_{10}alkanoyloxyalkyl, cyanomethyl, C_1–C_4alkanoyl or C_3–C_4alkenoyl, R^2 is hydrogen or methyl, R^3 is C_1–C_{12}alkyl, C_2–C_7alkenyl, C_6–C_{12}aryl, C_7–C_{11}phenylalkyl, phenyl substituted by C_1–C_4alkyl, C_5–C_6cycloalkyl, C_1–C_{12}alkoxy, C_2–C_6alkenyloxy, phenoxy, phenoxy substituted by C_1–C_4alkyl, C_7–C_{11}phenylalkoxy C_5–C_6cycloalkoxy or $—NR^5R^6$, and R^4 is hydrogen, C_1–C_4alkyl, C_5–C_6cycloalkyl phenyl, or a group of the formula II



(II)

and each of R^5 and R^6 independently is hydrogen, C_1–C_{12}alkyl, C_3–C_5alkenyl, cyclohexyl or phenyl, or R^5 and R^6 together are C_4–C_5alkylene.

4,322,532
SOLVENTS FOR THE CATALYTIC PRODUCTION OF ACRYLAMIDE FROM ACRYLONITRILE AND WATER

David G. Braithwaite, Tyler, Tex., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Nov. 17, 1980, Ser. No. 207,521

Int. Cl.³ C07C *102/08*

U.S. Cl. 546—128 **3 Claims**

1. An improved method for producing dry acrylamide of high purity comprising reacting a diethyl ether of tetraethylene glycol solution of acrylonitrile and water in the presence of a metallic nitrile conversion catalyst under conditions which convert at least a portion of the acrylonitrile to acrylamide and then recovering the acrylamide by treating the solution with a hydrocarbon liquid and recovering the precipitated dry acrylamide.

4,322,533
1H-INDOLE-2,3-DIONE DERIVATIVES

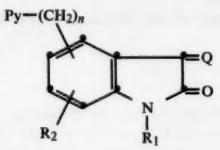
George Y. Lesher, R.D. 1, Box 268; Donald F. Page, 21 Alva St., and Monte D. Gruett, Box 304A, Elliot Rd., all of East Greenbush, N.Y. 12061

Continuation-in-part of Ser. No. 130,622, Mar. 17, 1980, abandoned. This application Jan. 16, 1981, Ser. No. 225,773

Int. Cl.³ C07D *401/04, 401/06*

U.S. Cl. 546—273 **48 Claims**

1. A compound having the formula:



where Py represents the 4-pyridinyl group; R_1 represents hydrogen, lower-alkyl, hydroxy-lower-alkyl (having from two to seven carbon atoms, at least two of which are linear), di-lower-alkylamino-lower-alkyl or carbo-lower-alkoxy-lower-alkyl; R_2 represents hydrogen or lower-alkyl; Q represents O, H(OH), NOH, NNH_2, NNH(lower-alkyl), N(lower-alkyl)$_2$, $NNHC_6H_5$, NNH(hydroxy-lower-alkyl) (having from two to seven carbon atoms, at least two of which are linear), $NNCH(=S)NH_2$, $NNHC(=NH)NH_2$ (only when R_1 is lower-alkyl), $NNHCOCH_2N$(lower-alkyl)$_3^+$ X^- or $NNHCOCH_2Pyr^+$ X^-, where Pyr^+ is the pyridinium cation and X^- in the latter two instances is the anion of sulfuric acid or a hydrohalic acid; n is 0 or the integer 1; the $Py—(CH_2)_n$ group occupies either the 4- or 5-position of the 1H-indole-2,3-dione nucleus; and the N—(Py)—oxides thereof; or a pharmaceutically acceptable acid-addition salt thereof, and where lower-alkyl, all occurrences other than specifically defined above, contains from one to seven carbon atoms.

4,322,534
PREPARATION OF ESTERS

Jonathan S. Baum, Pennington, N.J., assignor to FMC Corporation, Philadelphia, Pa.

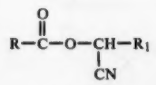
Continuation-in-part of Ser. No. 156,958, Jun. 6, 1980, Pat. No. 4,254,050, which is a continuation-in-part of Ser. No. 79,622, Sep. 27, 1979, abandoned. This application Feb. 12, 1981, Ser. No. 233,756

The portion of the term of this patent subsequent to Mar. 3, 1981, has been disclaimed.

Int. Cl.³ C07C *121/75*; C07D *213/64*

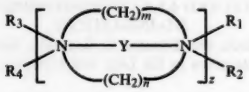
U.S. Cl. 546—300 **11 Claims**

1. A process for preparing an insecticidal α-cyano-3-phenoxybenzyl ester of the formula



wherein R is selected from 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropyl, 3-(2,2-dibromoethenyl)-2,2-dimethylcyclopropyl, 3-(2-chloro-3,3,3-trifluoropropenyl)-2,2-dimethylcyclopropyl, 2,2,3,3-tetramethylcyclopropyl, 1-(4-chlorophenyl)-2-methylpropyl, 1-(4-difluoromethoxyphenyl)-2-methylpropyl, and 1-[(2-chloro-4-trifluoromethyl)amino]-2-methylpropyl and R_1 is selected from 3-phenoxyphenyl, 4-fluoro-(3-phenoxy)phenyl, 3-(4-halophenoxy)phenyl, and 6-phenoxy-2-pyridyl which comprises reacting an acyl halide of the formula

wherein X is chlorine or bromine and R is as defined above with 3-phenoxybenzaldehyde, 4-fluoro-3-phenoxybenzaldehyde, a 3-(4-halophenoxy)benzaldehyde, or 6-phenoxy-2-pyridylcarboxaldehyde in a mixture of substantially water-immiscible aprotic solvent and an aqueous solution of water-soluble cyanide salt in the presence of a catalytic amount of rate-promoting agent selected from tertiary polyamines which are linear tertiary polyamines of the formula



wherein Y is $-(CH_2)_k-$ with k being 1–6, C_3–C_7 cycloalkane, C_2–C_6 alkenyl, or C_2–C_6 alkynyl; z is 1 or 2, and when z is 1, m and n are 0 or independently 1–6, and when m and n are 0, R_1, R_2, R_3, and R_4 are hydrocarbon groups, and R_1 may be joined with R_2, and R_3 may be joined with R_4 to form a ring containing the N atom to which both are joined, and when m is 1–6 and n is 0, R_1 and R_3 are absent, and R_2 and R_4 are hydrocarbon groups, and when both m and n are at least 1, R_2 and R_4 are absent; and when z is 2, m and n are 0, R_1 and R_3 are hydrocarbon groups and R_2 and R_4 are absent, 1,4,8,11-tetramethyl-1,4,8,11-tetraazacyclotetradecane, sparteine, and cryptates.

4,322,535

PREPARATION OF ESTERS

Jonathan S. Baum, Pennington, N.J., assignor to FMC Corporation, Philadelphia, Pa.

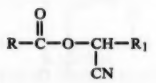
Continuation-in-part of Ser. No. 159,085, Jun. 13, 1980, Pat. No. 4,254,051, which is a continuation-in-part of Ser. No. 79,635, Sep. 27, 1979, abandoned. This application Feb. 12, 1981, Ser. No. 233,808

The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.

Int. Cl.³ C07C *121/75*; C07D *213/64*

U.S. Cl. 546—300 **10 Claims**

1. A process for preparing an insecticidal α-cyano-3-phenoxybenzyl ester of the formula



wherein R is selected from 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropyl, 3-(2,2-dibromoethenyl)-2,2-dimethylcyclopropyl, 3-(2-chloro-3,3,3-trifluoropropenyl)-2,2-dimethylcyclopropyl, 2,2,3,3-tetramethylcyclopropyl, 1-(4-chlorophenyl)-2-methylpropyl, 1-(4-difluoromethoxyphenyl)-2-methylpropyl, and 1-[(2-chloro-4-trifluoromethyl)amino]-2-methylpropyl and R_1 is selected from 3-phenoxyphenyl, 4-fluoro-(3-phenoxy)phenyl, 3-(4-halophenoxy)phenyl, and 6-phenoxy-2-pyridyl which comprises reacting an acyl halide of the formula

wherein X is chlorine or bromine and R is as defined above with 3-phenoxybenzaldehyde, 4-fluoro-3-phenoxybenzaldehyde, a 3-(4-halophenoxy)benzalehyde, or 6-phenoxy-2-pyridylcarboxaldehyde in a mixture of substantially water-immiscible aprotic solvent and an aqueous solution of water-soluble cyanide salt in the presence of a catalytic amount of amphoteric surfactant rate-promoting agent selected from aminoalkylsulfonic acids.

4,322,536

PROCESS FOR PRODUCING PYRIDINALDEHYDES

Rolf Bader, Riehen, Switzerland, and Dieter Reinehr, Kandern, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

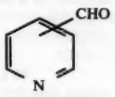
Division of Ser. No. 42,828, May 29, 1979, Pat. No. 4,237,275. This application Jun. 30, 1980, Ser. No. 164,459

Claims priority, application Switzerland, Jun. 8, 1978, 6287/78

Int. Cl.³ C07D *213/48*

U.S. Cl. 546—314 **10 Claims**

1. A process for producing a compound of the formula I



(I)

which comprises the step of: reacting in an inert organic solvent stoichiometric amounts of an aminomethylpyridine and a compound of the formula II

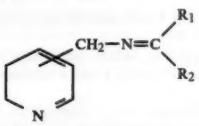
(II)

wherein

R_1 is hydrogen or alkyl having 1–8 C atoms,

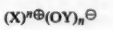
R_2 is alkyl having 1–8 C atoms, or R_1 and R_2 together are alkylene having 4–8 C atoms,

to give a compound of the formula



(III)

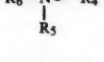
wherein R_1 and R_2 are as defined for formula II, isomerizing said compound III in said solvent at a temperature from 0° to 80° C., in the presence of at least 0.1 mole %, relative to the amount of said compound III, of a catalyst of the formula IV



(IV)

wherein

X is an alkali metal ion or alkaline earth metal ion, or the ammonium group

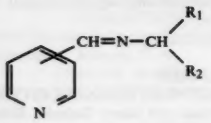


wherein R_3 to R_6 each independently of the other, are unsubstituted, straight-chain or branched-chain alkyl having 1–20 C atoms or alkyl having 1–20 C atoms substituted by phenyl or naphthyl,

Y is hydrogen or alkyl having 1–12 C atoms, and

n is the charge of the alkali metal ion or alkaline-earth metal ion,

to give a compound of the formula V



(V)

wherein R_1 and R_2 are as defined in formula II, and, finally converting said compound V, in the presence of an at least stoichiometric amount of inorganic acid in a strongly acid aqueous medium, into a compound of the formula I.

4,322,537

TERTIARY AMINE OXIDATION AND PRODUCTS THEREOF

Stuart L. Schreiber, Somerville, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Filed Jun. 2, 1980, Ser. No. 155,059

Int. Cl.³ C07D *213/54;* C07C *97/03*

U.S. Cl. 546—315 **10 Claims**

1. The method of oxidizing a tertiary amine selected from the group consisting of triethyl amine, diisopropyl ethyl amine, and N-methyl piperidine to form an acylated enamine, which method comprises mixing said amine with trihaloacetic anhydride or trihaloacetyl halide in a solvent inert to the reactants at a temperature from 0° to 100° C., and

separating beta-trihaloacetylated alpha, beta-enamine from the reaction mixture.

4,322,538

PREPARATION OF SYMMETRICAL TETRACHLOROPYRIDINE

Gail E. Vrieland, Midland, Mich.; Bart J. Bremmer, Ashland, Mass., and Richard E. Crooks, Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 20, 1981, Ser. No. 255,602

Int. Cl.³ C07D *213/02*

U.S. Cl. 546—345 **10 Claims**

1. A process for preparing 2,3,5,6-tetrachloropyridine comprising

(a) admixing pentachloropyridine, iodide ions and a proton donor in a polar, aprotic solvent to form a reaction mixture and

(b) heating said reaction mixture to a temperature in the range of from about 100° C. to about 200° C. until 2,3,5,6-tetrachloropyridine is formed in a high yield.

4,322,539

CONVERSION OF ETHERS TO THIOAMINES

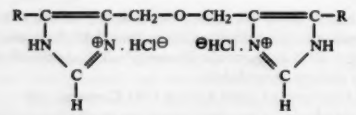
Gunner E. Nelson, and Michael J. Dagani, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 51,984, Jun. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 883,660, Mar. 3, 1978, abandoned. This application Apr. 13, 1981, Ser. No. 253,168

Int. Cl.³ C07D *233/64*

U.S. Cl. 548—342 **10 Claims**

1. A process for preparing a 4-(amino-alkylene-thiomethyl)-imidazole consisting essentially of reacting a bis-(imidazolylmethyl)-ether hydrochloride of formula



in which each R group is a lower alkyl group having from 1 to 4 carbon atoms with an amino alkylene thiol in which the alkylene group has from 2 to 4 carbon atoms, said reaction being carried out at a temperature from about 75° to 150° C. for a period sufficient to obtain said 4-(amino-alkylene-thiomethyl)-imidazole.

4. The process of claim 1 in which said amino thiol is 2-aminoethanethiol hydrochloride.

9. The process of claim 1 further characterized in that the reaction of said amino thiol is carried out with a mixture of said bis-(imidazolylmethyl)-ether hydrochloride and a 4-(hydroxymethyl)-imidazole hydrochloride to produce said 4-(amino-alkylene-thiomethyl)-imidazole.

4,322,540

SUBSTITUTED 4,5,6,7-TETRAHYDRO-1H (OR 2H)-INDAZOLES

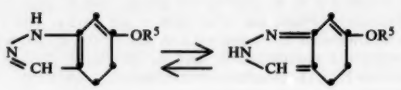
Nicholas J. Bach, and Edmund C. Kornfeld, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 20,559, Mar. 15, 1979, Pat. No. 4,276,300, which is a continuation-in-part of Ser. No. 5,064, Jan. 22, 1979, abandoned. This application Feb. 19, 1981, Ser. No. 235,499

Int. Cl.³ C07D *231/56*

U.S. Cl. 548—369 **2 Claims**

1. A tautomer of the formula



wherein R^5 is (C_1—C_3) alkyl or benzyl.

4,322,541

DIHYDROPYRAZOLE-5-CARBOXYLIC ACID AND ANALOGS

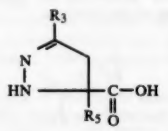
George C. Rovnyak, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 140,355, Apr. 14, 1980, Pat. No. 4,266,065. This application Aug. 22, 1980, Ser. No. 180,248

Int. Cl.³ C07D *231/06*

U.S. Cl. 548—379 **6 Claims**

1. A compound having the formula



wherein R_3 and R_5 each is independently hydrogen or alkyl having 1 to 8 carbon atoms.

4,322,542

STRONG ANION EXCHANGE COMPOSITION

Seth R. Abbott, Concord, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

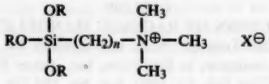
Filed Jan. 17, 1980, Ser. No. 112,964

Int. Cl.³ C07F *7/10*

U.S. Cl. 556—425 **18 Claims**

1. A strong anion exchange composition having a high capacity, said composition comprising microparticulate silica having a size of about 5–20 microns, and a silyl alkyl ammonium compound covalently attached to the surface of said microparticulate silica by reacting an aqueous slurry of said microparticulate silica with said ammonium compound, said reaction comprising (a) de-gassing said silica and (b) reacting said ammonium compound with an aqueous slurry of said degassed silica for a time and at a temperature sufficient to

produce said composition; said ammonium compound being present in a stoichiometric excess ranging up to an about two-to-three fold excess, said excess being that of the ammonium compound to the reactive silanol sites of said silica; and said temperature being below that at which polymerization occurs; and said ammonium compound having the general formula:



wherein n is an integer ranging from 2–5; R is methyl or ethyl; and X is an exchangeable anion.

4,322,543

4,5-UNSATURATED PROSTANOIC ACID DERIVATIVES

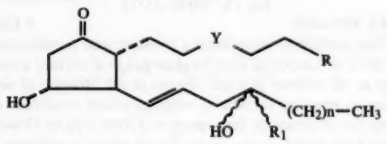
Paul W. Collins, Deerfield, Ill., and Raphael Pappo, Redwood City, Calif., assignors to G. D. Searle & Co., Skokie, Ill.

Division of Ser. No. 98,290, Nov. 28, 1979, Pat. No. 4,271,314. This application Oct. 24, 1980, Ser. No. 200,356

Int. Cl.³ C07C *177/00*

U.S. Cl. 556—436 **12 Claims**

1. A compound of the formula:



wherein R is —$COCH_2OH$ or —CH_2OH;
wherein R_1 is:
(a) hydrogen; or
(b) alkyl of 1 to 6 carbon atoms inclusive;
wherein n is an integer from 2 through 4 inclusive; wherein Y is a cis-vinylene or trans-vinylene group; and wherein the (+) refers to the structure of formula I, its mirror image or the mixture of racemates.

4,322,544

ULTRAVIOLET ABSORBING AGENT

Tomomi Okazaki, Yokohama; Kenichi Tomita, Tokyo; Hakuji Katsura, Yokohama; Masayuki Tejima, Yokohama, and Masako Naganuma, Yokohama, all of Japan, assignors to Toray Industries, Inc., Nihonbashi-Muromachi, Japan

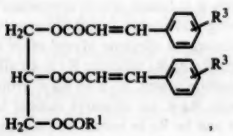
Filed Mar. 27, 1980, Ser. No. 134,481

Claims priority, application Japan, Apr. 2, 1979, 54-39614

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—55 **16 Claims**

1. An ultraviolet absorbing agent for human skin comprising at least one compound having the following general formulae



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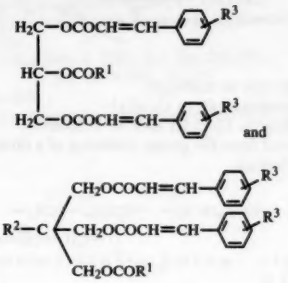


and

wherein R^1 is a saturated branched alkyl group having 7 carbon atoms, R^2 is a methyl or ethyl group and R^3 is an ortho- or para- methoxy group.

4,322,545

BENZOIC ACID ESTERS

Thomas L. Scala, Jr., West Milford, N.J., assignor to Finetex, Inc., Elmwood Park, N.J.

Continuation-in-part of Ser. No. 741,071, Sep. 14, 1979, Pat. No. 4,275,222, which is a continuation-in-part of Ser. No. 949,630, Oct. 10, 1978, abandoned. This application Apr. 13, 1981, Ser. No. 252,794

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—103 **6 Claims**

1. A substantially pure benzoic acid ester of a mixture of alcohols, wherein said mixture consists essentially of:
(A) at least one C_{12} or C_{14} primary alcohol,
(B) at least one C_{13} or C_{15} primary alcohol, wherein the weight ratio of even carbon number alcohols (A) to odd carbon number alcohols (B) is from about 0.25:1 to about 4:1 and at least 70% by weight of each alcohol is linear and substantially all of the remainder of each alcohol is branched at the two carbon position.

4,322,546

15-DEOXY-16-HYDROXY-16-ALLENYL PROSTANE DERIVATIVES OF THE E AND F SERIES

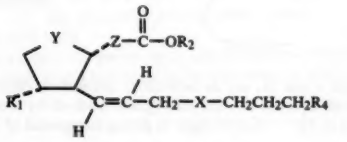
Middleton B. Floyd, Jr., Suffern, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 46,512, Jun. 7, 1979, Pat. No. 4,233,453. This application Apr. 21, 1980, Ser. No. 142,561

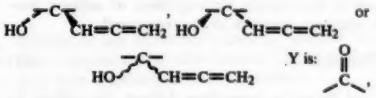
Int. Cl.³ C07C *177/00*

U.S. Cl. 560—121 **27 Claims**

1. An optically active compound of the formula:



wherein X is:



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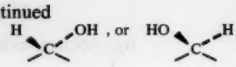


R_1 is hydrogen or hydroxyl;
R_2 is hydrogen or C_1 to C_6 alkyl;
R_4 is hydrogen, C_1 to C_3 alkyl or chlorine;
Z is selected from the group consisting of a divalent moiety of the formula

$$-(CH_2)_n-,\ -(CH_2)_mOCH_2-,\ -(CH_2)_m-SCH_2-$$

$$-CH_2-\overset{cis}{CH=CH}(CH_2)_p-$$

wherein n is 5 to 7, m is 3 to 5, and p is 2 to 5, with the provision that when Y is

then Z must be $-(CH_2)_m\ SCH_2-(CH_2)_mOCH_2-$ or $-(CH_2)_n-$; and the racemic mixture thereof; and when R_2 is hydrogen, the pharmaceutically acceptable salts thereof.

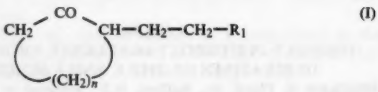
4,322,547

PROCESS FOR PRODUCING DIFUNCTIONAL ALIPHATIC ORGANIC COMPOUNDS

Francesco Minisci, Milan; Paolo Maggioni, Cernusco Montevecchia, and Attilio Citterio, Monza, all of Italy, assignors to Brichima S.p.A., Milan, Italy

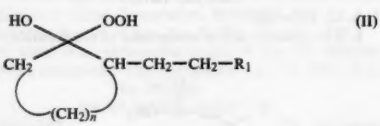
Filed Jul. 21, 1980, Ser. No. 170,956
Int. Cl.³ C07C *67/10, 67/22, 99/00, 120/00*
U.S. Cl. 560—204 **10 Claims**

1. A process for producing difunctional aliphatic organic compounds of formula $X-(CH_2)_n-Y$ in which n is 6 or 7, X is —COOH, or —COOR, Y is —CN, —COOH, $-CONH_2$, $-CH_2NH_2$ or —COOR, where R is a linear or branched alkyl containing 1 to 6 carbon atoms, wherein a compound of formula



(I)

in which n is 2 or 3 and R_1 is —CN or —COOH, is reacted with H_2O_2; the obtained hydroperoxide of formula



(II)

in which n and R_1 are as heretofore defined, is catalytically split in an aqueous or aqueous-organic medium by means of a catalyst of Fe^{++}/Cu^{++} type to give a compound of formula

$$HOOC-(CH_2)_3-CH=CH-(CH_2)_2-R_1 \quad \text{(III)}$$

in which R_1 is as heretofore defined, and the unsaturated acid thus produced is catalytically hydrogenated at ambient temperature and ordinary pressure to the compound

$$HOOC-(CH_2)_n-R_1 \quad \text{(IV)}$$

in which n and R_1 are as heretofore defined, the radical R_1 being converted into the radicals Y, if the radicals Y are different from R_1.

9. A process as claimed in claim 1, which is carried out in the presence of an aliphatic alcohol of formula R—OH so as to directly obtain compounds in which Y is —COOR.

4,322,548

RESOLUTION OF RACEMIC MANDELIC ACID

George Kesslin, Teaneck, N.J., and Kenneth W. Kelly, New City, N.Y., assignors to Kay Fries, Inc., Stony Point, N.Y.

Filed Feb. 13, 1980, Ser. No. 121,331
Int. Cl.³ C07B *19/00*
U.S. Cl. 562—401 **26 Claims**

1. Process for the optical resolution of racemic mandelic acid which process comprises contacting said racemic mandelic acid with a phenylglycine ester or a phenylglycine ester hydrochloride in a reaction medium, and recovering the D(−) mandelic acid and L(+)mandelic acid formed.

4,322,549

OXIDATION OF DI- AND TRIMETHYL AROMATIC HYDROCARBONS HAVING ORTHO-ORIENTED METHYL GROUPS IN LIQUID PHTHALIC ACID

George E. Kuhlmann, Lisle, and Alan G. Bemis, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 1, 1978, Ser. No. 874,127
Int. Cl.³ C07C *51/16*
U.S. Cl. 562—416 **3 Claims**

1. The method of co-oxidizing o-xylene and pseudocumene with air or air enriched with oxygen gas to a mixture containing up to 50 volume percent oxygen in the absence of added extraneous reaction solvent or medium which comprises conducting the oxidation in the presence of from 3 up to 23 weight percent free liquid water; under liquid phase conditions at a temperature in the range of from 210° C. up to 235° C.; under a gauge pressure of from 3 to 5 kg/cm^2 above the vapor pressure of water at said temperature; in the presence of catalysis for each 1.0 gram mole of aromatic hydrocarbon of 5 to 9 milligram atom of cobalt, 4 to 6 milligram atoms of manganese, 6 to 1 milligram atoms of zirconium, and 10 to 20 milligram atoms of bromine provided by elemental bromine or hydrogen bromide, wherein initial retention of ions of said metals in solution is aided by from 10 up to 30 milligram moles of o-toluic acid per gram mole of aromatic hydrocarbon; and the ratio of pseudocumene to o-xylene charged to the oxidation is such that the mole ratio of trimellitic acid to o-phthalic acid in the reaction mixture does not exceed 2:1.

4,322,550

RECOVERY OF MERCAPTOALKANOIC ACIDS USING ALKYLENE GLYCOL ETHERS

James B. Kimble, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 3, 1980, Ser. No. 193,871
Int. Cl.³ C07C *148/04, 149/20, 149/22, 149/26*
U.S. Cl. 562—512 **5 Claims**

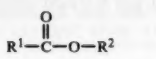
1. A process for the liquid-liquid solvent extraction of a mercaptoalkanoic acid represented by the formula: HS-R-COOH wherein R is an alkylene or cycloalkylene group having from one to twelve carbon atoms, from an aqueous medium or water in which it is found which comprises subjecting the medium containing said acid to liquid-liquid solvent extraction conditions employing an alkylene glycol ether represented by the formula: $R_3O(R_2O)_nR_4$ wherein R_3 is an alkyl group having from 2 to 6 carbon atoms, R_2 is an alkyl group having from 1–4 carbon atoms, R_4 is an alkanoyl radical having 2 to 12 carbon atoms or can be R_3 as herein defined and wherein n is an integer in the range of 1–6.

4,322,551
PROCESS FOR PREPARING AROMATIC AMIDE ANTIOXIDANTS

Niranjan V. Shah, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

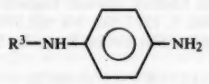
Filed Feb. 16, 1978, Ser. No. 878,199
Int. Cl.³ C07C *102/06*
U.S. Cl. 564—137 8 Claims

1. An improved process for the synthesis of an antioxidant amide comprising reacting a simple aliphatic or aromatic ester, either saturated or unsaturated having the general formula (A)



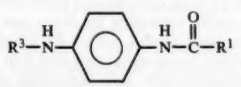
(A)

with an aromatic amine having the general formula (B)



(B)

in an organic solvent and in the presence of (C) a base selected from the group consisting of alkali metal amides and alkali metal alkoxides, to yield an intermediate metallic salt, and hydrolyzing the salt to form an antioxidant amide of the general formula (E)



(E)

wherein R^1 is selected from the group consisting of alkyl radicals having from 1 to 20 carbon atoms, aryl radicals having from 6 to 12 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms, alkenyl radicals having from 2 to 10 carbon atoms, R^2 is selected from the group consisting of alkyl radicals having from 1 to 10 carbon atoms, and alkenyl radicals having from 2 to 10 carbon atoms and wherein R^3 is selected from the group consisting of alkyl radicals having from 1 to 20 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms, aryl radicals having from 6 to 12 carbon atoms and aralkyl radicals having from 7 to 13 carbon atoms,—wherein—the improvement—comprises: (1) adding—an alcohol (D)—to the reaction before the beginning of the reaction, said alcohol (a) being a solvent for the metal alkoxide (C), (b) being added in sufficient quantity to dissolve the metal alkoxide, and (c) having the formula R^4OH, wherein R^4 is an alkyl group of 1–6 carbon atoms, and (2) continuously removing the alcohol during the reaction to raise the reaction temperature.

4,322,552
PROCESS FOR THE PRODUCTION OF 4-AMINOBUTYRAMIDE HYDROCHLORIDE

Axel Kleemann, Hanau; Jurgen Martens, Alzenau, and Horst Weigel, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Nov. 18, 1980, Ser. No. 208,022
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947825
Int. Cl.³ C07C *102/00*
U.S. Cl. 564—198 16 Claims

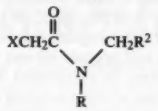
1. A process for the production of 4-aminobutyramide hydrochloride comprising hydrogenating 3-cyanopropionamide in the presence of a solvent inert under the reaction conditions, a noble metal catalyst and hydrogen chloride at a temperature between 5° and 80° C.

4,322,553
PROCESS FOR PRODUCING N-(HALOMETHYL)ACYLAMIDES

John P. Chupp, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

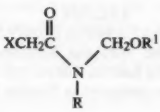
Filed Feb. 2, 1981, Ser. No. 230,576
Int. Cl.³ C07C *102/00*
U.S. Cl. 564—209 28 Claims

1. Process for preparing compounds of Formula I



I

which comprises reacting a compound of Formula II



II

with thionyl chloride or thionyl bromide in the presence of a Lewis Acid catalyst where in the above formulae

X is hydrogen, halogen, a C_{1-6} alkyl or haloalkyl radical, a C_{3-7} cycloalkyl radical, a phenyl or benzyl radical or any of said radicals substituted with halogen, NO_2, CF_3, C_{1-6} alkyl or alkoxy, phenyl or benzyl;

R is a C_{1-20} alkkyl radical, an acyclic 1-alken-1-yl radical having up to 10 carbon atoms, a cycloalkyl or 1-cycloalken-1-yl radical having up to 7 carbon atoms, a pheny radical or said cycloalkyl, 1-cycloalken-1-yl or phenyl radicals substituted with one or more C_{1-6} alkyl, alkoxy or alkoxyalkyl, C_{2-4}alkenyl or C_{3-4} alkenyloxy, NO_2 or trifluoromethyl radicals or halogen;

R^1 is a hydrocarbyl radical having up to 10 carbon atoms or such radical substituted with halogen or C_{1-8} alkoxy or alkoxyalkyl groups and

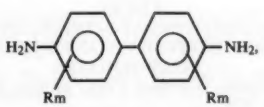
R^2 is a chloro or bromo atom.

4,322,554
POLYMERIC AZOMETHINES

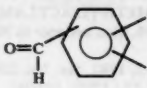
Hans-Joachim Herrmann, Troisdorf; Günther Meyer, Troisdorf Sieglar, and Klaus-Dieter Steffen, Hennef, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jun. 4, 1980, Ser. No. 156,449
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1979, 2924944
Int. Cl.³ C07C *119/10*; C09B *55/00*
U.S. Cl. 564—273 2 Claims

1. A process for preparing a polyazomethine which comprises contacting a benzidine or its derivative of the formula



wherein R can represent hydrogen, halogen, alkyl or alkoxy and m can assume a value between 0 and 2 in an organic solvent with a dialdehyde of the formula



wherein R' represents identical or different alkyl moieties which can be terminally halogen substituted or halogen or hydrogen, n can assume a value between 0 and 2, the two carbonyl groups being in ortho, meta, or para position with respect to one another in an organic solvent which forms an azeotrope with water, said organic solvent being an aliphatic or aromatic hydrocarbon or chlorinated hydrocarbon, said process being carried out at a temperature at which said solvent boils or at which an azeotrope of said solvent with water forms.

4,322,555
NONAPRENYLAMINE DERIVATIVES

Yoshiyuki Tahara, Ohi; Hiroyasu Koyama, Ageo; Yasuhiro Komatsu, Niiza; Reiko Kubota, Tokyo, and Toshihiro Takahashi, Ohi, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

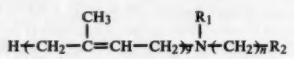
Filed Apr. 22, 1981, Ser. No. 256,577

Claims priority, application Japan, Apr. 23, 1980, 55-55107

Int. Cl.³ C07C *87/28*

U.S. Cl. 564—305 **3 Claims**

1. Nonaprenylamine derivatives represented by the general formula



wherein n is an integer of from 0 to 2, R_1 represents a hydrogen atom, a lower alkyl group or a nonaprenyl group, and R_2 represents a phenyl group, and the acid addition salts thereof.

4,322,556
METHOD FOR PREPARING ANILINE BY REACTION OF NITROBENZENE AND VINYLCYCLOHEXENE

John A. Patterson, Fishkill, N.Y.; Wheeler C. Crawford, Houston, and James R. Wilson, Missouri City, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 16,674, Mar. 1, 1979, abandoned, which is a division of Ser. No. 934,789, Aug. 18, 1978, abandoned. This application Sep. 26, 1980, Ser. No. 191,232

The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.

Int. Cl.³ C07C *85/11, 5/02, 5/42, 5/367*

U.S. Cl. 564—423 **26 Claims**

1. The method for preparing aniline which comprises

passing a charge stream containing vinyl cyclohexene and $R'NO_2$, wherein R' is alkyl, cycloalkyl, aryl, aralkyl, or alkaryl, into contact with homogeneous hydrogen transfer catalyst at hydrogen transfer conditions thereby forming product stream containing aniline; and

recovering said product stream containing aniline.

4,322,557
1-ARYLOXY-2-(S)-HYDROXY-3-(TRIARYLPHOSPHONIO)-PROPANE DERIVATIVES AS PROSTAGLANDIN INTERMEDIATES

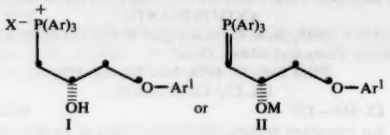
Glenn C. Andrews, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Feb. 17, 1981, Ser. No. 234,292

Int. Cl.³ C07C *45/26*

U.S. Cl. 568—11 **9 Claims**

1. A compound of the formula



having the 2-(S)-configuration, wherein Ar and Ar^1 are each phenyl or monosubstituted phenyl, said substituent being alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms or fluoro; M is an alkali metal; and X is iodo, chloro, bromo, mesyl or tosyl.

4,322,558
OXIDATION PROCESS

John F. Risebury, Middlesbrough, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 5, 1977, Ser. No. 857,971

Claims priority, application United Kingdom, Dec. 31, 1976, 54424/76

Int. Cl.³ C07C *45/33, 29/52*

U.S. Cl. 568—359 **10 Claims**

1. A process for the manufacture of cyclohexanol and cyclohexanone which comprises oxidising cyclohexane in the liquid phase with a molecular oxygen-containing gas in the presence of a boron compound with partial conversion of cyclohexane to give an oxidate comprising cyclohexane, boric esters of cyclohexanol and cyclohexylhydroperoxide, treating the said oxidate with water to hydrolyse the said boric esters to cyclohexanol and boric acids, separating the water and boric acids and treating the organic residue with a cyclohexane-soluble peroxide-decomposing heavy metal compound to decompose the cyclohexylhydroperoxide, and separating cyclohexane from the resulting cyclohexanol and cyclohexanone.

4,322,559
4(5)-ACETYL-9,9-DIMETHYLTRICYCLO-[4,4,0,$1^{8,10}$]-UNDEC-1-ENE, ITS PREPARATION AND USE IN PERFUMERY COMPOSITIONS AND AS AN ODORANT

Jens Conrad, Hilden; Klaus Bruns, Krefeld-Traar, and Horst Upadek, Erkrath, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Aug. 14, 1980, Ser. No. 178,083

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1979, 2935547

Int. Cl.³ C07C *49/587, 49/607*

U.S. Cl. 568—373 **3 Claims**

1. The isomeric mixture 4(5)-acetyl-9,9-dimethyltricyclo-[4,4,0,$1^{8,10}$]-undec-1-ene.

4,322,560
PROCESS FOR CONTROLLING HIGHLY EXOTHERMIC HYDROPEROXIDE DECOMPOSITION

Ronald J. Vaughan, Orinda, Calif., assignor to Varen Technology, Marshallton, Del.

Continuation-in-part of Ser. No. 970,474, Dec. 18, 1978, abandoned, and a continuation-in-part of Ser. No. 970,475, Dec. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 660,634, Feb. 23, 1976. This application Mar. 20, 1980, Ser. No. 132,149

Int. Cl.³ C07C *45/53, 37/08, 29/136*

U.S. Cl. 568—385 **8 Claims**

1. In the process of conducting the exothermic liquid phase decomposition of organic hydroperoxide catalyzed by a solid polymeric acid catalyst to produce ketones and alcohols, the improvement which comprises carrying out said decomposition by passing said hydroperoxide over the surface of a thin film of said acid catalyst which is insoluble in said hydroperox-

ide and reaction products and which is on the surface of a substantially impermeable heat exchange element and withdrawing heat of reaction by passing a heat transfer fluid over the opposite side of said catalyst-supporting heat exchanger element.

4,322,561

METHOD FOR THE PREPARATION OF CARBONYL COMPOUNDS

Lucio Faggian, and Edoardo Platone, both of San Donato Milanese, Italy, assignors to Anio S.p.A., Palermo, Italy

Continuation of Ser. No. 937,869, Aug. 29, 1978, abandoned. This application Apr. 14, 1980, Ser. No. 139,765

Claims priority, application Italy, Sep. 14, 1977, 27509 A/77

Int. Cl.³ C07C *45/64, 45/61*

U.S. Cl. 568—391 **7 Claims**

1. A method for the preparation of carbonyl compounds which may also contain in their structure one or more other functional groups, including groups which are reactive in radical reactions, comprising the step of reacting a ketone selected from the group consisting of acetone and methylethyl ketone and an olefinically unsaturated compound having one or more hydrogen atoms thereof substituted by one or more functional groups selected from hydroxy and alkoxy with each other in the presence of catalytic amounts of Mn acetate in a molar ratio relative to said olefinically unsaturated compound of from 0.01:1 to 1:1 and an amine in a molar ratio relative to said olefinically unsaturated compound of from 0.001:1 to 1:1.

4,322,562

OXIDATION PROCESS USING METAL NITRO OR NITROSYL COMPLEX

Benjamin S. Tovrog, Naperville, Ill.; S. Elliot Diamond, New Providence, and Frank Mares, Whippany, both of N.J., assignors to Allied Corporation, Morristown, N.J.

Continuation-in-part of Ser. No. 86,920, Oct. 22, 1979, abandoned, and a continuation-in-part of Ser. No. 927,194, Jul. 24, 1978, Pat. No. 4,191,696. This application Dec. 19, 1980, Ser. No. 218,321

The portion of the term of this patent subsequent to Mar. 4, 1997, has been disclaimed.

Int. Cl.³ C07C *45/35, 45/34*

U.S. Cl. 568—401 **15 Claims**

1. In a process of oxidizing a compound having at least one isolated olefinic bond, in liquid phase using molecular oxygen as the oxygen source, the improvement which comprises in the oxidation reaction mixture a transition metal nitro or nitrosyl complex representable by the general formula $BM(L_4)NO_2$ or $M(L_4)NO$ respectively, wherein M is a transition metal and L_4 is any number or any combination of monodentate, bidentate, tridentate and tetradentate ligands such as to provide four binding sites, B being a monodentate base ligand; NO_2 being the nitro ligand—N(=O)O and NO being the nitrosyl ligand each bound to the metal atom via the nitrogen atom; under conditions, including use as activator of a divalent palladium compound which forms a complex with said olefinic bond, whereby the nitro ligand of said metal nitro complex oxidizes said compound and is reduced to a nitrosyl ligand and such nitrosyl ligand is reoxidized by molecular oxygen to nitro ligand.

4,322,563

SUBSTITUTED BIPHENYL-2-CARBOXALDEHYDES

William F. Hoffman, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 140,321, Apr. 16, 1980, abandoned. This application Feb. 11, 1981, Ser. No. 233,522

Int. Cl.³ C07C *47/546*

U.S. Cl. 568—425 **1 Claim**

1. A compound selected from:

3,5-dichloro-4′-fluoro-1,1′-biphenyl-2-carboxaldehyde;

3,5-dimethyl-4′-fluoro-1,1′-biphenyl-2-carboxaldehyde;

3,3′,5-trimethyl-4′-fluoro-1,1′-biphenyl-2-carboxaldehyde; or

3,3′,5,5′-tetramethyl-1,1′-biphenyl-2-carboxaldehyde.

4,322,564

PROCESS FOR HYDROFORMYLATION OF OLEFINS

Yoshitoshi Tsunoda; Shimpei Tomita, and Chihiro Miyazawa, all of Kurashiki, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Sep. 22, 1980, Ser. No. 189,427

Claims priority, application Japan, Sep. 21, 1979, 54-121796

Int. Cl.³ C07C *45/50, 47/02*

U.S. Cl. 568—454 **12 Claims**

1. A process for hydroformylation of olefins which comprises a step of reacting aliphatic mono-olefins with carbon monoxide and hydrogen using a Group VIII noble metal-triarylphosphine complex catalyst in the presence of an excess amount of triarylphosphine, a reaction solvent, and organic high boiling point by-products, then separating the aliphatic saturated aldehyde produced from the resulting hydroformylation reaction product, and thereafter circulating the residual liquid containing the catalyst and the organic high boiling point by-products to the reaction system as a circulating catalyst liquid,

wherein the improvement comprises withdrawing at least a part of said circulating catalyst liquid as an extracted catalyst liquid, distilling off at least a part of the organic high boiling point by-products by steam distillation of said extracted catalyst liquid, and recirculating the bottoms of the steam distillation tower to the hydroformylation reaction step.

4,322,565

PROCESS FOR PURIFYING ETHERS

Anderson O. Dotson, Jr., and Francis T. Wadsworth, both of Monroe, La., assignors to Columbian Chemicals Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 69,210, Aug. 23, 1979. This application Jan. 12, 1981, Ser. No. 224,420

Int. Cl.³ C07C *41/06*

U.S. Cl. 568—697 **4 Claims**

1. In a process for preparing an ether by reacting an excess of a C_1–C_2 alkanol with an isoolefin containing 4 or 5 carbon atoms to form a reactor effluent comprising a mixture of (1) an ether corresponding to the formula R—O—R′, wherein R is a methyl or ethyl group and R′ is a t-butyl or t-amyl group, (2) unreacted alkanol, and (3) unreacted hydrocarbon, the improvement which comprises:

(A) alternately passing effluent from the reactor through first and second absorption vessels, each containing a fixed bed of solid calcium chloride, to complex the unreacted alkanol with the calcium chloride while the ether and unreacted hydrocarbon pass through the vessel,

(B) while one absorption vessel is being used to complex unreacted alkanol, regenerating the other absorption vessel by passing a liquid C_4 or C_5 hydrocarbon feed comprising an isoolefin therethrough at a temperature of about 80°–120° C. to desorb the alkanol and provide a desorption effluent of liquid C_4 or C_5 hydrocarbon feed and alkanol, and

(C) feeding the desorption effluent to the reactor.

4,322,566

MAGNESIUM OXIDE CATALYST

Bruce E. Leach, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Division of Ser. No. 113,991, Jan. 21, 1980, Pat. No. 4,269,735. This application Nov. 3, 1980, Ser. No. 203,296

Int. Cl.³ C07C *37/16, 39/06*

U.S. Cl. 568—804 **6 Claims**

1. A method for the alkylation of phenols comprising contacting said phenols with an alkylating agent at temperatures of

from about 420° C. to about 500° C. in the presence of an effective amount of a MgO catalyst promoted with from about 0.5 to about 15% by weight of amorphous metal ions selected from the group consisting of titanium, uranium, zirconium, chromium or mixtures of these and from about 0.5 to about 15% by weight sulfate ion wherein the alkylating agent is selected from the group consisting of methanol, ethanol, isopropanol, or butanol.

4,322,567

PROCESS FOR PRODUCTION OF AROMATIC ALCOHOLS

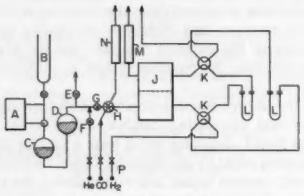
Fujihisa Matsunaga, Iwakuni; Norio Ohno, Yamaguchi, and Hirohiko Nambu, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed May 22, 1980, Ser. No. 152,155

Claims priority, application Japan, Jun. 18, 1979, 74-75624

Int. Cl.³ C07C *27/04, 27/06*

U.S. Cl. 568—815 **3 Claims**



1. In a process for producing an aromatic alcohol by catalytic hydrogenation of at least one tertiary peroxide selected from the group consisting of tertiary aromatic hydroperoxides having 9 to 16 carbon atoms in which the aromatic ring is selected from the group consisting of naphthyl, phenyl and benzyl and tertiary aromatic peroxides having 12 to 30 carbon atoms in which the aromatic ring is selected from the group consisting of naphthyl, phenyl and benzyl in the presence of hydrogen gas and a palladium catalyst supported on a carrier in a lower aliphatic alcohol solvent to form the corresponding alcohol; the improvement wherein said catalyst has a palladium metal surface area, determined by the CO chemisorption method, of from about 10 to about 200 m^2/g. Pd and is supported on an alumina or a silica-alumina carrier.

4,322,568

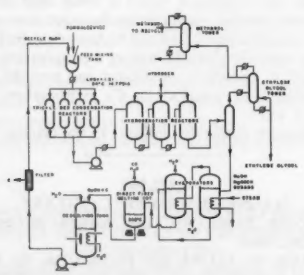
GLYCOLALDEHYDE OR ETHYLENE GLYCOL FROM FORMALDEHYDE

Alvin H. Weiss, 26 Oakland Ave., Shrewsbury, Mass. 01545

Division of Ser. No. 38,794, May 14, 1979, Pat. No. 4,238,418. This application Jul. 24, 1980, Ser. No. 171,744

Int. Cl.³ C07C *29/14*

U.S. Cl. 568—862 **8 Claims**



1. A process for converting carbon monoxide and hydrogen to ethylene glycol, comprising the steps of:

(a) converting carbon monoxide and hydrogen to methanol,

(b) converting methanol to formaldehyde,

(c) converting formaldehyde to glycolaldehyde,

(d) converting glycolaldehyde to ethylene glycol by exposing glycolaldehyde and formaldehyde to a zeolite catalyst in an aqueous basic solution including sodium hydroxide in a mole ratio to the glycolaldehyde of 0.21 to 0.85, and

(e) maintaining the above ratio at approximately 94° C. and at atmospheric pressure.

4,322,569

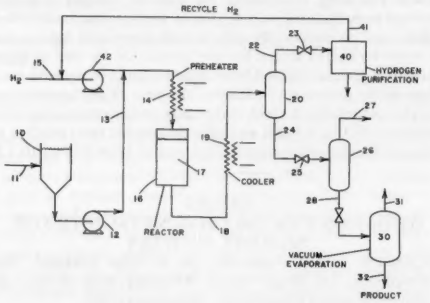
CATALYTIC HYDROGENATION OF GLUCOSE TO PRODUCE SORBITOL

James C. Chao, West Nyack, N.Y., and Derk T. A. Huibers, Pennington, N.J., assignors to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Aug. 1, 1980, Ser. No. 174,464

Int. Cl.³ C07C *27/04, 29/14*

U.S. Cl. 568—863 **10 Claims**



1. A process for producing sorbitol by catalytic conversion of monosaccharides, comprising the steps of:

(a) providing a feedstream containing at least about 20 W % monosaccharide solution and having pH of 7 to 13;

(b) preheaing the feed and hydrogen gas to at least about 100° C., and passing the heated feedstream mixture through a fixed bed catalytic reaction zone containing a high activity nickel catalyst;

maintaining the reaction zone at conditions of 500–2000 psig partial pressure of hydrogen, 130°–180° C. temperature, and 0.5–3.5 V/Hr/V space velocity, for achieving at least about 98 W % conversion of the feed; and

(d) withdrawing product containing substantially sorbitol in water solution.

4,322,570

PROCESS FOR THE ADDITION OF A CHLORINATED METHANE CONTAINING AT LEAST THREE CHLORINE ATOMS TO AN ETHYLENICALLY UNSATURATED HYDROCARBON

Willem J. de Klein, Dieren, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 627,410, Oct. 30, 1975, abandoned. This application Mar. 14, 1977, Ser. No. 777,370

Claims priority, application Netherlands, Nov. 4, 1974, 7414329

Int. Cl.³ C07C *17/28*

U.S. Cl. 570—257 **13 Claims**

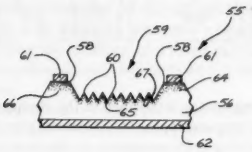
1. A process for the preparation of an addition product of a chlorinated methane containing at least 3 chlorine atoms and an ethylenically unsaturated hydrocarbon at a temperature in the range of about 70° to about 250° C. in the presence of a radical initiator comprising a manganese compound in which the manganese has a valence of at least 3, and a compound containing a carbonyl group the free ligands of which compound are at either side linked to a carbon atom, said carbonyl-containing compound also containing an α-hydrogen atom.

4,322,571

SOLAR CELLS AND METHODS FOR MANUFACTURE THEREOF

Billy J. Stanbery, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 17, 1980, Ser. No. 169,790
Int. Cl.³ H01L *31/06, 31/18*
U.S. Cl. 136—255 **64 Claims**



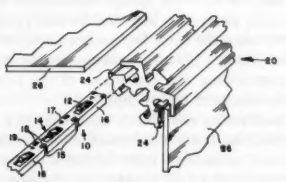
57. An improved light transducer suitable for use as a solar cell comprising, in combination, a wafer-like semiconductor substrate, said substrate having: a first relatively deep dispersion layer of dopant impurities formed in the near-surface regions of said substrate with said deep dispersion layer having relatively high surface concentrations of dopant impurities and defining a relatively deep junction at the interface of said dispersion layer and said substrate defining regions of differing chemical potential in said substrate and in said dispersion layer; a plurality of spaced texturized surface areas formed on said substrate by complete removal of spaced areas of said first dispersion layer with a texturizing etchant and defining raised, spaced, mesa-like contact areas intermediate said spaced texturized surface areas; a second relatively shallow dispersion layer of dopant impurities formed in the near-surface regions of said texturized surface areas with said shallow dispersion layer having a substantially uniform depth and defining a relatively shallow junction at the interface of said shallow dispersion layer and said substrate defining regions of differing chemical potential in said substrate and said shallow dispersion layer; and, electrodes formed on said raised mesa-like contact areas and on the surface of said substrate remote from said raised contact areas.

4,322,572

ELECTROMAGNETIC INTERFERENCE SHIELDING DEVICE

Delmer E. Snyder, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 22, 1979, Ser. No. 87,283
Int. Cl.³ H05K *9/00*
U.S. Cl. 174—35 R **7 Claims**



1. In combination with an electronic equipment cabinet including an elongate support member having means therein defining a longitudinally-extending groove, and a closure member having an edge portion thereof extending into said groove, improved electromagnetic interference shielding means disposed within said groove for maintaining electrical contact between said members, said shielding means comprising

an elongate metal strip having an angular cross-sectional configuration provided by first and second leg portions thereof,

a plurality of cantilever spring members disposed at spaced-apart locations along said first leg portion, said spring members extending in a generally longitudinal direction form one face of said portion, and

a plurality of tangs projecting from the opposite face of said first leg portion,

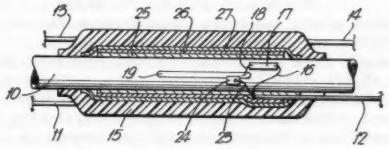
said strip being positioned within said groove with said spring members pressing said edge portion of the closure member against a first inner surface of said groove, and with said tangs engaging a second inner surface of the groove.

4,322,573

ENCAPSULATION OF TELECOMMUNICATIONS CABLE SPLICES

Leonard J. Charlebois, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 11, 1980, Ser. No. 129,246
Int. Cl.³ H01R *3/02*
U.S. Cl. 174—72 R **8 Claims**



4. A telecommunications cable having a splice comprising:

electrical connections between a pair of bared conductor ends of a first cable and a pair of conductor ends of a second cable;

a layer of sealing material sealingly enclosing and in intimate contact with the connections, bared conductor ends, and adjacent insulation on cable parts, the layer formed from overlapped windings of heat softenable sealing tape around the first cable, beneath and then over the bared conductor ends, the tape heat softened and shaped into said intimate contact; and

an injection moulded encapsulation of plastics material completely surrounding the wrapping and adjacent insulation covered cable, the encapsulation being sealingly bonded to the said adjacent insulation.

4,322,574

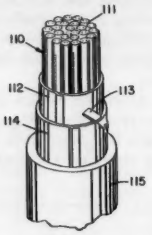
CABLE SHIELDING TAPE AND CABLE

Kenneth E. Bow, Lake Jackson, Tex., and Thomas H. Lyon, Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 76,035, Sep. 17, 1979, which is a continuation-in-part of Ser. No. 860,368, Dec. 14, 1977, abandoned, which is a continuation-in-part of Ser. No. 673,842, Apr. 5, 1976, abandoned. This application Jun. 9, 1980, Ser. No. 157,726
The portion of the term of this patent subsequent to Sep. 29, 1998, has been disclaimed.
Int. Cl.³ B32B *15/08;* **H01B** *7/18, 7/22*
U.S. Cl. 174—107 **2 Claims**

2. An improved cable adapted for use in supplying electrical power and communications comprising a core of at least one insulated conductor, a shield surrounding said core comprising a metal strip having tightly and directly adhered to at least one side thereof an irradiated adhesive layer composed of a copolymer of ethylene and from about 2 to about 20 percent based on copolymer weight of an ethylenically unsaturated carboxylic

acid, said adhesive layer having a deformation temperature of at least about 270° F. after being irradiated with an effective



amount of a high energy ionizing radiation, and an outer plastic jacket surrounding said shield.

4,322,575

FLAME RETARDANT COMPOSITIONS

Richard S. Skipper, Swindon, England, assignor to Raychem Limited, London, England

Filed Nov. 15, 1979, Ser. No. 94,551

Claims priority, application United Kingdom, Dec. 13, 1978, 48227/78

Int. Cl.³ C08K *9/00;* **H01B** *7/00;* **F16L** *9/14;* **D02G** *3/00*

U.S. Cl. 174—120 SR **30 Claims**

1. An elongate substrate provided, over at least a part thereof, with a flame retarded cladding, said cladding being formed from a halogen-free polymeric composition which comprises a substantially cross-linked blend of a vinyl acetate-/alkene copolymer with a styrene/butadiene rubber, or a thermoplastic polyalkene or alkene/alkene copolymer and incorporates an effective amount of a halogen-free inorganic flame retardant which releases water on heating when subjected to the conditions of ASTM-D-2863, with the provisos that:

when the vinyl acetate/alkene copolymer is blended with a styrene/butadiene rubber, the vinyl acetate/alkene copolymer has a vinyl acetate content of greater than 55 weight percent, or

when the vinyl acetate/alkene copolymer is blended with a thermoplastic polyalkene or alkene/alkene copolymer and the blend contains less than 66 weight percent vinyl acetate/alkene copolymer, the blend has an overall vinyl acetate content of at least 18 weight percent, or

when the vinyl acetate/alkene copolymer is blended with a thermoplastic polyalkene or alkene/alkene copolymer and the blend contains at least 66 weight percent vinyl acetate-/alkene copolymer, then the vinyl acetate/alkene copolymer has a vinyl acetate content of greater than 40 weight percent.

4,322,576

MESSAGE FORMAT FOR SECURE COMMUNICATION OVER DATA LINKS

William J. Miller, Miami Beach, Fla., assignor to Racal-Milgo, Inc., Miami, Fla.

Filed Dec. 28, 1979, Ser. No. 108,039

Int. Cl.³ H04L *9/00*

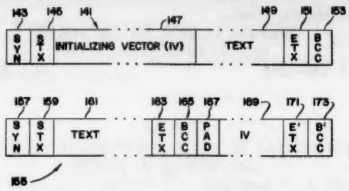
U.S. Cl. 178—22.07 **18 Claims**

1. In a data link communication system utilizing a synchronous protocol and having an encryption/decryption device at each end of the data link, the improvement in said encryption/-decryption device comprising:

means for generating a multi-bit random number to be used as an initialization vector;

means for enciphering message text according to the DES algorithm in the cipher feedback mode; and

means for supplying said initialization vector to said enciphering means prior to the start of the next message enciphering, and supplying the same initialization vector to the receiving encryptor/decryptor device as the trailing end of the previous encrypted message, whereby said



initializing vector is supplied to the deciphering portion of the receiving encryptor/decryptor device for the purpose of initializing it for reception of the next cipher.

4,322,577

CRYPTOSYSTEM

Hugo Brändström, 22 Johan Enbergs väg, Solna, Sweden (S-171 91)

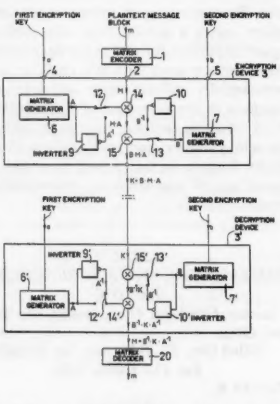
PCT No. PCT/SE78/00100, § 371 Date Aug. 21, 1979, § 102(e) Date Aug. 21, 1979, PCT Pub. No. WO79/00418, PCT Pub. Date Jul. 12, 1979

PCT Filed Dec. 20, 1978, Ser. No. 154,403

Claims priority, application Sweden, Dec. 21, 1977, 7714587

Int. Cl.³ H04L *9/00*

U.S. Cl. 178—22.05 **9 Claims**



1. A method for encrypting information characters of a message using encryption keys and for decrypting a message so encrypted, using the same keys, comprising the steps of:

(A) encrypting a plaintext message by the steps of

(a) partitioning the characters of the plaintext message into blocks of binary digits;

(b) partitioning each block into subblocks, the number of subblocks being the square of a natural number, the binary content of each subblock corresponding to an element of a Galois-field, the elements of the Galois-field corresponding to the different elements of a square plaintext matrix having an order equal to the natural number;

(c) generating by means of a first encryption key applied to a first matrix generator a first key matrix belonging to a prescribed matrix group over the Galois-field;

(d) multiplying, in a first matrix multiplier, the plaintext matrix by the first key matrix to form an output;

(e) generating by means of a second encryption key applied to a second matrix generator a second key matrix

belonging to the same matrix group as the first key matrix;

(f) multiplying, in a second matrix multiplier, the output of the first matrix multiplier left by the second key matrix to form an output constituting an encrypted plaintext block;

(B) transmitting to a receiver the encrypted plaintext block;

(C) decrypting the received encrypted plaintext block by the steps of

(g) generating by means of the second encryption key applied to a third matrix generator a third key matrix

(h) multiplying the received encrypted plaintext block, in a third matrix multiplier by the third key matrix to form an output;

(i) generating by means of the first encryption key applied to a fourth matrix generator a fourth key matrix;

(j) multiplying the output of the third matrix multiplier in a fourth matrix multiplier by the fourth key matrix to form an output constituting a restored original plaintext matrix; and

(k) decoding the restored original plaintext matrix to provide a restored original plaintext block.

4,322,578
METHOD AND DEVICES FOR THE OMNIDIRECTIONAL RADIATION OF SOUND WAVES

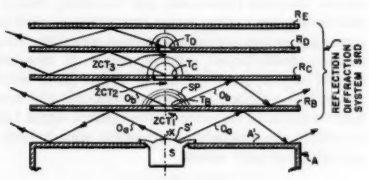
Paolo Selmin, Castel Maggiore, Italy, assignor to Society AP Selmin SAS of Massimo Coltelli & Co., Bologna, Italy

Filed Sep. 6, 1978, Ser. No. 940,309

Claims priority, application Italy, Sep. 6, 1977, 27274 A/77

Int. Cl.³ H04R *1/02*

U.S. Cl. 179—1 E **26 Claims**



1. A device for omnidirectionally spreading sound waves and effecting separation thereof, comprising:

a sound source;

a housing having a first supporting wall for said sound source, said sound source being secured to said wall with its axis substantially orthogonal thereto;

a first reflector-diffractor disposed in the path of sound waves emitted by said sound source, said reflector-diffractor comprising:

(a) a sound reflective member having upper and lower surfaces and a zone transparent to sound waves, said transparent zone having a dimension corresponding to a predetermined wave length whereby said zone acts as a punctiform source of sound waves at or near said predetermined wave length for omnidirectionally spreading said waves, waves having longer wave lengths not transmitted through said zone being omnidirectionally spread by reflection between said lower surface of said reflector-diffractor and said wall; and

(b) a first reflector disposed in the path of sound waves transmitted through said zone, said reflector comprising a sound reflective surface for omnidirectionally spreading said transmitted sound waves by reflection between said reflector and said upper surface of said reflector-diffractor.

4,322,579
SOUND REPRODUCTION IN A SPACE WITH AN INDEPENDENT SOUND SOURCE

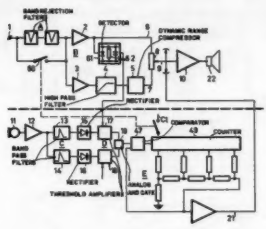
Derk Kleis, and Johannis A. Van Gorsel, both of Breda, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 26, 1980, Ser. No. 124,880

Claims priority, application Netherlands, Feb. 26, 1979, 7901477

Int. Cl.³ H03G *3/32*

U.S. Cl. 179—1 D **13 Claims**



1. An arrangement for sound reproduction in a space in which an independent sound source can also be present, said arrangement comprising; (1) a sound reproduction channel that comprises, an electro-acoustic transducer for converting electric signals in the reproduction channel into acoustic signals, an amplifier, at least two branches, one branch having a substantially flat frequency response characteristic over substantially the complete audio range, and at least one other branch having a transfer characteristic which falls towards the low frequency end of the audio spectrum and comprising a dynamic range compressor for compressing the dynamic range of electric signals in said other branch, means for applying the outputs of the branches to a device for converting output signals of these branches in a variable proportion into a single signal, means for applying said signal to said electroacoustic transducer, (2) a separate channel, including a sound transducer, for generating a control voltage which depends on the sound level of said independent sound source but which is independent to a substantial extent of any signal picked up by said sound transducer from the electro-acoustic transducer, and (3) means voltage for varying the gain and the frequency response of said amplifier in the sound reproduction channel by controlling said variable proportion by means of said control voltage.

4,322,580
CLOCK SELECTION CIRCUIT

Ashfaq R. Khan, Elmhurst; Max S. Macrander, Warrenville, and Konstanty E. Krylow, Chicago, all of Ill., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Sep. 2, 1980, Ser. No. 182,871

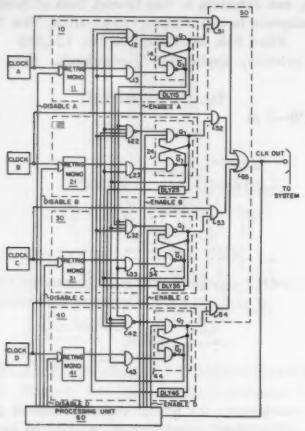
Int. Cl.³ G06F *1/04*; H04Q *3/54*

U.S. Cl. 179—18 EE **8 Claims**

1. A clock selection circuit for use in a telephone switching system including a plurality of clock circuits, each operated to generate a clock signal, and a processing unit, operated to generate a plurality of enable and disable signals, said selection circuit comprising:

a plurality of selection means each including first, second and third outputs, each of said selection means connected to an associated one of said clock circuits, to said third output of all other selection means and to said second output of an associated one of said selection means, each operable to generate signals on said first, second and said third outputs, each operated in response to a clock signal from an associated clock circuit, said third output signal from all other selection means and said second output signal from said associated one other selection means, to generate said first output signal, each of said selection

means further operated in response to an absence of said clock signal from said associated clock circuit to generate said third output signal; and



gating means connected to said plurality of selection means and to said plurality of clock circuits, operated in response to each of said first output signals and a clock signal from an associated clock circuit to generate a clock-out signal.

4,322,581

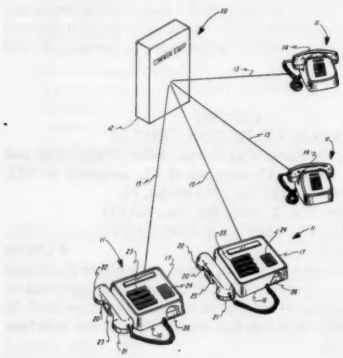
MULTIFUNCTION TELEPHONE WITH MESSAGE INFORMATION AND CONTROL INFORMATION CIRCUITS FOR CONNECTING STATIONS AND COMMON EQUIPMENT IN A TELEPHONE NETWORK

Ronald W. Christain, Longwood, and Barry Slingsby, Altomante Springs, both of Fla., assignors to Stromberg-Carlson Corporation, Orlando, Fla.

Filed Feb. 11, 1980, Ser. No. 120,571

Int. Cl.³ H04Q *5/18*

U.S. Cl. 179—18 ES **38 Claims**



1. A telephone network for providing telephone communications between a plurality of sites through a central location, said network comprising:

A. telephone transmission means for independently interconnecting the central location with at least one site, at least one said transmission means including a first signal path for conveying signals corresponding to acoustic information and a second signal path for conveying data signals,

B. central switching means, at the central location, connected to each of said first signal paths for selectively interconnecting pairs of said telephone transmission means thereby to transfer acoustic information between interconnected sites,

C. central telephone control means, at the central location, connected to said central switching means and to said second signal paths for transferring frequency-shift-keyed signals representing control data between said control means and each of said second signal paths, and

D. a multifunction telephone means connected to each of said dual path telephone transmission means at corresponding sites, each said multifunction telephone means including:

i. acoustic conversion means connected to said first signal path for converting acoustic information between an audible form and an electrical form for transfer between said telephone means and said first signal path,

ii. at least one first function means for performing a predetermined function in response to control data received from said central telephone means, each said first function means responding to the control data when it is constituted by electrical digital signals,

iii. at least one second function means for generating electrical digital signals corresponding to control data to be transferred to said central telephone control means,

iv. decoding means for generating electrical digital signals in response to frequency-shift-keyed signals thereby to control said first function means, and

v. encoding means including (1) a voltage source for generating a voltage, (2) switching means connected to said voltage source for selectively switching a voltage onto said second signal path means, and (3) a programmed microcomputer system means including (a) a plurality of output signalling means connected to said first function means and to said switching means and (b) a plurality of input signalling means connected to said second function means and said decoding means, said microcomputer system means generating on said output signalling means connected to said switching means a frequency-shift-keyed control signal in response to signals at said input signalling means, said switching means being shifted between conductive and nonconductive states in response to the control signal thereby to couple the frequency-shift-keyed signals onto said second signal path means.

4,322,582

LIQUID-SEALED TYPE OF A GOVERNOR FOR TELEPHONE DIAL

Ki W. Song, Seoul, Rep. of Korea, assignor to Kyung Hwan Cheong, Seoul, Rep. of Korea

Filed Jun. 22, 1979, Ser. No. 51,067

Claims priority, application Rep. of Korea, Jun. 22, 1978, 0.3337/78[U]

Int. Cl.³ H04M *1/315*

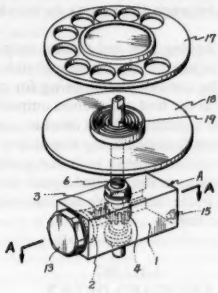
U.S. Cl. 179—90 R **1 Claim**

1. In combination with a telephone dial and return spring therefor, a liquid-sealed type of a governor which is comprised of:

(a) a rectangular hexahedral chamber in a liquid-sealed body, said chamber including a pinion engaged with a rack disposed in a recess formed on one of the vertical side walls of said chamber whereby said rack can move reciprocably, said pinion being operatively secured to said dial through the lower end of the axis extended downwardly from the dial plate of said telephone dial;

(b) a cylindrical chamber directly connected to said rectangular hexahedral chamber, said cylindrical chamber including a piston dividing the same into two sub-chambers, said piston being secured to said rack at one end thereof and having a small hole at the lower part thereof and said piston including a circular resilient plate having a small

hole at the center part thereof and said plate being bent at its peripheral edge and fixed to a circular compressive plate whereby said small holes permit communication between said sub-chambers;



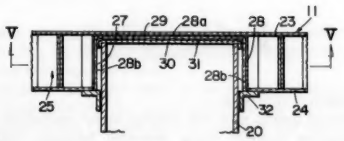
(c) a closure at one side of said body; and
(d) a liquid inlet at the opposite side of said body.

4,322,583

VOICE COIL BOBBIN CONNECTION TO LOUDSPEAKER DIAPHRAGM OF HONEYCOMB CORE SANDWICHED BY SHEETS

Keijiro Maeda, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 13, 1979, Ser. No. 93,853
Claims priority, application Japan, Nov. 20, 1978, 53-143145
Int. Cl.³ H04R 9/04
U.S. Cl. 179—115.5 VC **3 Claims**



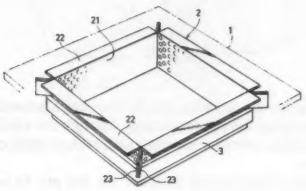
1. A flat plate loudspeaker comprising,
a diaphragm assembly including first and second diaphragm sheet members spaced from each other by a honeycomb like core structure,
a magnetic driving circuit including a voice coil bobbin member operatively associated with said diaphragm assembly to impart vibration thereto,
means disposed within said core structure cooperatively interlocking said voice coil bobbin member with each of said first and second diaphragm sheet members whereby each said first and second diaphragm sheet members are driven simultaneously by said voice coil bobbin member when said magnetic driving circuit is driven,
said means cooperatively interlocking said voice coil bobbin with each of said first and second diaphragm sheet members comprising a cavity formed within said core structure and an opening formed within said second diaphragm sheet member within which an end of said voice coil bobbin member is disposed,
said voice coil bobbin member being secured to a peripheral surface of said second diaphragm sheet member adjacent said opening therein and secured to said first diaphragm sheet member at an interior facing surface thereof within the cavity formed within said core structure, and
an end cap member disposed on the free end of said voice coil member,
said end cap member being secured to said voice coil member and to the interior facing surface of said first diaphragm sheet member.

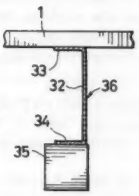
4,322,584

VOICE COIL BOBBIN FOR PLANAR DIAPHRAGM

Kunihiko Shimada, and Yukio Tsuchiya, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 30, 1980, Ser. No. 164,129
Claims priority, application Japan, Jun. 30, 1979, 54/90261[U]; Jun. 30, 1979, 54/90262[U]; Jun. 30, 1979, 54/90265[U]; Jun. 30, 1979, 54/90273[U]; Jun. 30, 1979, 54/90274[U]
Int. Cl.³ H04R 9/04
U.S. Cl. 179—115.5 VC **9 Claims**





1. A regular polygonal voice coil bobbin for a corresponding regular polygonal planar diaphragm in which one edge of said voice coil bobbin is secured to said planar diaphragm comprising: a plurality of bobbin frames forming said regular polygonal voice coil bobbin, each of said bobbin frames having a coupling member at each end thereof each of which extends outwardly forming a predetermined angle with the longitudinal direction of the respective bobbin frame with said coupling members of adjacent bobbin frames being in planar contact with one another, said coupling members being bonded together to assemble said bobbin frames into said voice coil bobbin.

9. A voice coil bobbin for a planar diaphragm wherein one end of said voice coil bobbin is secured to said planar diaphragm comprising mounting flange means extending from one end of said voice coil bobbin so as to be intimately bonded to said planar diaphragm, and voice coil flange means extending from the opposite end of said voice coil bobbin so as to provide for mounting a voice coil thereon.

4,322,585

PERSONAL ELECTRONIC LISTENING SYSTEM WITH AN AIR AND BONE TRANSDUCER MOUNTED ON THE CLOTHING COLLAR

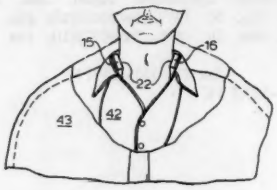
James P. Liautaud, River and Bluff Rds., Cary, Ill. 60013

Filed May 5, 1980, Ser. No. 146,759
Int. Cl.³ H04M 1/04
U.S. Cl. 179—157 **3 Claims**

1. A method for providing sound to ears of a wearer of a portable personal electronic sound system, comprising the steps of:
providing a sound transducer unit having a protective enclo-

sure with a sound transducer mounted therein and at least one pin projecting therefrom electrically connected to the sound transducer;

mounting the transducer unit by pushing the pin through an article of clothing worn by the user at a vicinity of the user's ear and such that if a coat is worn over the article of clothing a portion of the enclosure is pressed against a portion of the body of the user for at least partial bone conduction of the sound to the ears;



providing an electrically conductive engagement member for engaging the pin projecting through the clothing, said engagement member having an electrical cable connected thereto;

placing the engagement member on the pin to secure the transducer unit to the clothing;

routing the cable to the electronic sound system; and

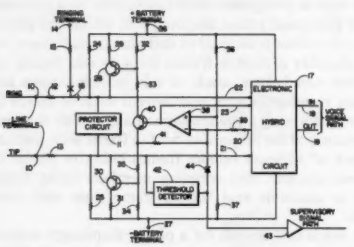
connecting an end of the cable to the sound system for operation of the transducer unit.

4,322,586

TRANSFORMERLESS LINE INTERFACE CIRCUIT

Gordon F. Mein, Ottawa, and John B. Terry, Carp, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 13, 1980, Ser. No. 206,630
Int. Cl.³ H04B *1/58;* H04M *19/06;* H04Q *3/18*
U.S. Cl. 179—170 NC **7 Claims**



1. A line circuit for coupling a.c. signals from a unidirectional a.c. signal path to a communication line, and for supplying the communication line with energizing current from a d.c. power source, the line circuit comprising:

a pair of line terminals for connection to a pair of leads in the communication line;

a pair of battery terminals for connection across the d.c. power source;

a fixed impedance feed means including a pair of resistances of predetermined value, each of the resistances being connected in series between separate ones of the line and battery terminals;

a variable current feed means including source and sink current paths, the source current path being connected in series between one of the line terminals and one of the battery terminals and including a control input, the sink current path being connected in series between the other of the line terminals and the other of the battery terminals and including a control input at the line terminals, the source and sink current paths exhibiting a.c. impedance characteristics substantially higher than the impedance characteristic of the fixed impedance feed means, and the source and sink current paths being responsive to control signals at their respective control inputs for conducting direct current between the battery terminals and the line terminals;

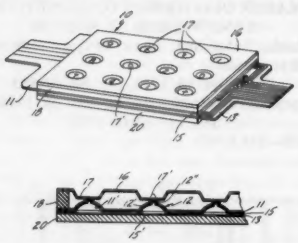
a control circuit having first and second outputs connected to the control inputs of the source and sink current paths respectively, the control circuit being for generating the control signals at the first and second outputs to cause said source and sink current paths to conduct similar flows of current, the control circuit being responsive to a.c. signals on the unidirectional signal path for generating corresponding variations in the control signals whereby signals corresponding to the a.c. signals are transmitted along the communication line.

4,322,587

KEYBOARD DEVICE

Jack L. Burns, Gilbert, Ariz., and Link Forte, Xenia, Ohio, assignors to Rogers Corporation, Rogers, Conn.

Filed Dec. 6, 1979, Ser. No. 100,861
Int. Cl.³ H01H *9/26*
U.S. Cl. 200—5 R **16 Claims**



1. A switch comprising:

first contact means, said first contact means including a first conductive element being movable between first and second positions;

second contact means, said second contact means including a second conductive element aligned with and out of contact with said first conductive element when said first conductive element is in the first position, and said first conductive element being in contact with said second conductive element when said first conductive element is in the second position; and

flexible cover sheet means, said cover sheet means defining a planar surface having at least a first depression in alignment with and extending toward said contact means conductive elements and having a base portion, whereby flexing of the base portion of said depression toward said contact means will move at least one of said conductive elements toward the other and establish electrical contact between said first and second contact means conductive elements.

4,322,588

SLIDE SELECTOR SWITCH DEVICE

Calvin L. Chumley, St. Louis County; William W. Hendrickson, St. Charles, and Leon P. Mace, St. Louis, all of Mo., assignors to UMC Industries, Inc., Stamford, Conn.

Filed Apr. 4, 1980, Ser. No. 137,534
Int. Cl.³ H01H *15/08, 15/10, 15/16*
U.S. Cl. 200—5 A **15 Claims**

1. A slide selector switch device comprising:

membrane switch means comprising a base layer, an inter-

mediate layer, and a cover layer each of electrical insulation material;

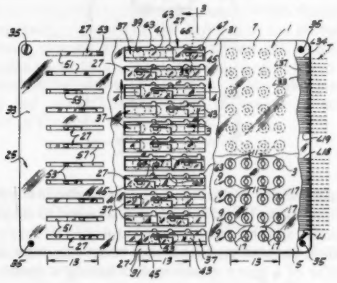
the layers being secured together with the intermediate layer sandwiched between the base and cover layers;

the intermediate layer having a plurality of openings therein arranged in a matrix defined by the points of intersection of a set of first generally parallel lines with a set of second generally parallel lines,

the base and cover layers each having an electrically conductive switching and circuit pattern on its inside face including contact areas at the openings in the intermediate layer,

the membrane switch means further comprising a plurality of leads, one lead for each of said lines, extending to an edge of the membrane switch means,

the electrically conductive switching and circuit pattern on the cover layer including a first plurality of conductors, one for each of said first lines, each conductor electrically interconnecting the contact areas along the respective first line and the respective lead, the pattern on the base layer including a second plurality of conductors, one for each of



said second lines, each conductor electrically interconnecting the contact areas along the respective second line and the respective lead,

portions of the cover layer at the openings being elastically depressible into the openings for making electrical contact between the contact areas of the base and cover layers at the openings,

said switching and circuit patterns forming circuits between the leads for the first lines and the leads for the second lines, each circuit being adapted to be made on electrical contact of the contact areas at a respective opening,

slide guide means overlying the cover layer of the membrane switch means,

and a plurality of slides, one for each line of one of said sets of lines, for depressing said portions of the cover layer into the openings, each slide being slidably guided by the guide means for movement along the respective line of said one set of lines to a plurality of positions in each of which it depresses the portion of the cover layer at a respective opening in the intermediate layer into the respective opening for making the circuit between the respective leads.

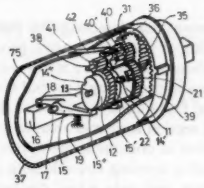
4,322,589

CONTROL DEVICE FOR ELECTRIC MOTOR-REDUCTION UNIT

Alain Pommat, Cluses, and Pierre Fillion, Ville La Grand, both of France, assignors to Etablissements Carpano & Pons, France

Filed May 6, 1980, Ser. No. 147,247
Claims priority, application France, May 21, 1979, 79 13718
Int. Cl.³ H01H *3/16, 19/18*
U.S. Cl. 200—30 R **3 Claims**

1. A control device for an electric motor speed-reducing unit intended for rotatably driving a winding rod of a rolling shutter, roller blind or the like which comprises a first shaft; first and second cams disposed side-by-side on said first shaft and freely rotatable thereon, each of said cams having in its periphery a single notch, switch means controlling the energizing circuit of the electric motor of said unit, switch actuating means comprising a control member biased into contact with the peripheries of said first and second cams and operable to actuate said switch means only when said control member engages in said notches of both of said cams simultaneously, reduction drive means kinematically coupling said first cam to said electric motor to rotate constantly when said motor is running, said first cam having on its periphery at least two drive teeth, a first pinion rotatable on a second shaft parallel to said first shaft having teeth engageable by said drive teeth on said first cam to drive said first pinion one step each revolution



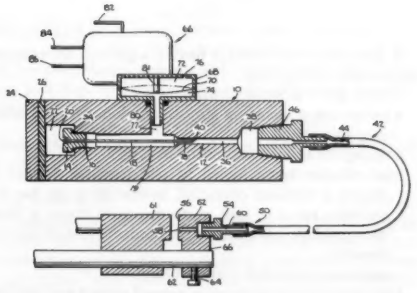
of said first cam, a second pinion coaxial with and rotating with said first pinion and a toothed wheel coaxial with and fixed to said second cam, said toothed wheel meshing with and being driven by said second pinion, whereby said toothed wheel and second cam are rotated step-by-step as said first cam rotates continuously, said second pinion and said toothed wheel having numbers of teeth such that the notches of said first constantly rotating cam and said second cam rotating step-by-step, starting from a condition in which said control member engages said notches in both cams, do not again reach such condition until said second cam has accomplished step-by-step a number n of full revolutions which is at least equal to two during which it has performed N steps, while said first cam has performed N full revolutions, N not being a multiple of n.

4,322,590

PNEUMATIC REMOTE SENSING APPARATUS

Martin Sobel, R.D. 8, Floral Rd., Flemington, N.J. 08822

Filed Oct. 22, 1979, Ser. No. 87,043
Int. Cl.³ H01H *35/40*
U.S. Cl. 200—81.9 R **11 Claims**



1. A pneumatic remote sensing device comprising:

(a) a connecting tube defining a connecting tube bore having an upstream end and a downstream end;

(b) a structure defining a passageway having an upstream end, a downstream end and a venturi section between its upstream and downstream ends, the downstream end of

said passageway communicating with the upstream end of said connecting tube bore;

(c) means for connecting the upstream end of said passageway to a source of gas under pressure whereby gas received in said passageway from such source may flow downstream in said passageway and said connecting tube bore;

(d) means for confining any gas flowing downstream in said passageway into a constricted stream of cross-sectional area substantially less than the cross-sectional area of said connecting tube bore so that the constricted stream extends through said venturi section;

(e) blockage means for substantially preventing or permitting the escape of gas from the downstream end of said connecting tube bore in response to the phenomenon to be sensed;

(f) defector means for detecting the pressure within said venturi section of said passageway, producing a first output signal when such pressure is less than a predetermined trip pressure and producing a second output signal, different from said first output signal when the pressure within said venturi section is greater than said trip pressure; and

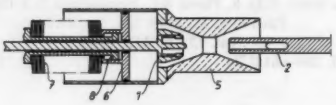
(g) a relief valve in communication with said passageway, said relief valve opening and releasing gas from said passageway when, and only when, the pressure within said passageway exceeds a predetermined relief pressure, said relief pressure being greater than said trip pressure.

4,322,591

CIRCUIT BREAKER WITH MEANS FOR PRODUCING A FLOW OF ARC-EXTINGUISHING GAS

Erik Andersson, and Carl E. Solver, both of Ludvika, Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed May 12, 1980, Ser. No. 148,832
Claims priority, application Sweden, May 18, 1979, 7904368
Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 A **4 Claims**



1. Electric circuit breaker having a gaseous arc-extinguishing medium comprising:

a fixed and a movable contact;

a pump means including a relatively stationary piston and a movable cylinder;

a spring for biasing said piston axially;

said cylinder being joined to said movable contact and, during a breaking operation, compressing the gas in the cylinder space of said pump means to create a blast of extinguishing gas towards the contact areas of the circuit breaker;

a stationary mounted stop member;

said spring retains said piston pressed against said stop member in the closed as well as the open position of the circuit breaker; and

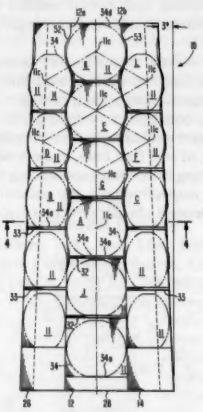
said spring having such a high pre-stress that said piston only moves when the gas pressure in the cylinder space exceeds a value which is higher than the pressure generated upon an interruption of the rated operating current of the circuit breaker.

4,322,592

SUSCEPTOR FOR HEATING SEMICONDUCTOR SUBSTRATES

John G. Martin, Scotch Plains, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 22, 1980, Ser. No. 181,376
Int. Cl.³ H05B *5/08;* **B05C** *13/00*
U.S. Cl. 219—10.49 R **7 Claims**



1. In a susceptor of the type comprising a hollow polyhedron having a plurality of walls, each wall adapted to support on its outer planar surface one or more substrates in nearly vertical orientation, each of said substrates being generally polygonal or circular of a given diameter and having a center, the improvement comprising:

each wall being subdivided into a plurality of surface regions in vertical alignment, said regions being bounded by horizontal edges that are spaced slightly larger than one of said substrates, each surface region having a center, each region being arranged further to support one of said substrates, the center of the supported substrate being substantially coincident over the center of the region;

a plurality of ledges each adapted to support a substrate placed on the associated surface region, each one of said ledges extending along the associated lower horizontal edge of each one of said surface regions; and

the ledges of respective adjacent walls being displaced such that substrates on adjacent walls when supported on the ledges are not horizontal alignment, wherein the susceptor is a truncated pyramid, the wall widths being tapered such that the width of the upper portions of each wall is narrower than the diameter of the substrate and the lower portion of each wall is slightly larger than the diameter of the substrate, the surface regions in one or more of the upper wall portions having a width less than the substrate whereby the edges of the supported substrate will extend beyond the corner of the intersecting walls.

4,322,593

APPARATUS FOR PRE-HEATING RESIN TABLET

Kunihiko Nishi, Higashikurume; Yoshiaki Wakashima, Kawasaki; Akira Suzuki, Ome; Aizo Kaneda, Yokohama, and Sumumu Tuzuku, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

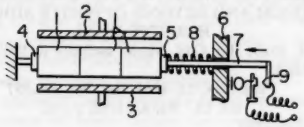
Filed Nov. 26, 1979, Ser. No. 97,126
Claims priority, application Japan, Nov. 24, 1978, 53-144178
Int. Cl.³ H05B *6/56, 6/50*
U.S. Cl. 219—10.81 **12 Claims**

1. An apparatus for pre-heating resin tablets comprising:

means for heating at least one resin tablet to soften the latter;

means for setting a reference softening degree for the at least one resin tablet; and

means for detecting the softening degree of the at least one resin tablet, the detecting means including a pressure source and a pressure transmitting member coupled to the pressure source, said pressure transmitting member having one end for contact with a resin tablet to continuously exert pressure from the pressure source on the resin tablet to cause its yielding deformation when said tablet is softened by heating, the pressure transmitting member being

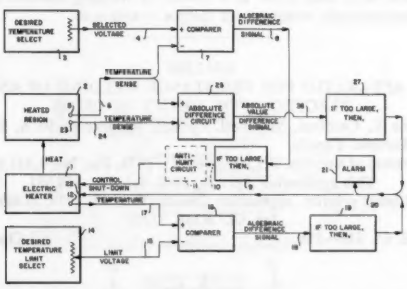


arranged so as to be movable a distance in accordance with the yielding deformation to provide information representative of the softening degree being detected, and the detecting means being associated with the setting means to deenergize the heating means when the softening degree being detected becomes equal to the set reference softening degree, whereby resin tablets can be uniformly softened to said reference softening degree based on the yielding deformation of the tablets as the tablets are softened and notwithstanding any difference in softening points of the resin tablets.

4,322,594
TEMPERATURE CONTROL SYSTEM WITH ALARM AND SHUT DOWN FOR NON-TRACKING CONDITION OF DUAL THERMOMETERS

A. Glen Brisson, Arlington Heights, Ill., assignor to Respiratory Care, Inc., Arlington Heights, Ill.

Filed Jun. 27, 1980, Ser. No. 163,485
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—497 **8 Claims**

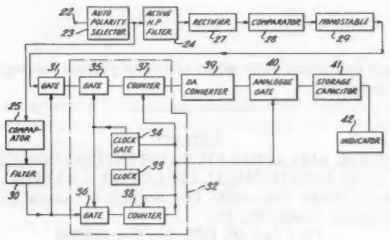


1. In combination with an electric heater for establishing an elevated temperature above ambient at a heated region spaced therefrom, and a temperature control system including a pair of sensors located adjacent each other at said region, signal comparing circuits respectively connected to said sensors for producing difference signals in response to deviation of the elevated temperature from a predetermined reference value and switching control means operatively connecting one of said signal comparing circuits to the heater for intermittent energization thereof tending to maintain the elevated temperature of the region at said predetermined reference value, the improvement residing in fail-safe assurance means comprising a third sensor located adjacent to the heater, shut-down control means connecting said third sensor to the switching control means for deenergizing and maintaining the heater deenergized in response to an excessive temperature differential between the heater and the heated region, and signal drift detection means connecting the other of the signal comparing circuits to the shut-down control means for alternatively deenergizing and maintaining the heater deenergized in response to bidirectional increase in the difference signals beyond a predetermined limit.

4,322,595
ARC MONITOR FOR ELECTRICAL DISCHARGE MACHINING

Alan Fowell, Mossley; Trevor W. Shaw, Cranfield, and John R. Crookall, Harrold, all of England, assignors to National Research Development Corporation, London, England

Filed Jul. 29, 1980, Ser. No. 173,355
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 C **14 Claims**



1. Apparatus for determining the proportion of discharge time in which arcs occur in electrical discharge machining, comprising:

filter means for receiving signals representative of the voltage across the discharge gap of an electrical discharge machine, and for passing signals in at least a band of frequencies above a cut-off frequency in the range 1 MHz to 4 MHz;

spark-indication means for generating a spark-indicating signal by determining when the output signal of the filter means exceeds a reference level;

discharge-detection means for receiving signals representative of the said voltage across the gap and for generating a discharge-indication signal while a discharge occurs; and

analysis means for deriving from the spark-indication signal and the discharge-indication signal a signal representative of the proportion of discharge time in which arcs occur.

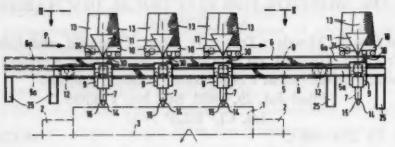
4,322,596
APPARATUS FOR PRODUCING LARGE SHAFTS BY WELDING BUILD UP

Heinz Krakow; Harald Tomsen, and Jürgen Herm, all of Hamburg, Fed. Rep. of Germany, assignors to Blohm & Voss AG, Hamburg, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,372
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1978, 2854683
Int. Cl.³ B23K *9/18, 37/02*
U.S. Cl. 219—73.21 **5 Claims**

1. Apparatus for producing cylindrical bodies by building-up weld material thereon utilizing a submerged arc welding process comprising: a plurality of welding heads movable along said cylindrical body parallel to the axis thereof; individual supply means for each of said welding heads, said supply means supplying welding wire and welding powder individually to each of said welding heads; a welding head carriage supporting each of said welding heads; a separate supply means carriage supporting each of said individual supply means; and drive means provided separately for each of said welding head carriage and said supply means carriage; with a plurality of said welding head carriages and supply means carriages being

arranged in the same horizontal plane and with said welding head carriages being moved synchronously parallel to the axis



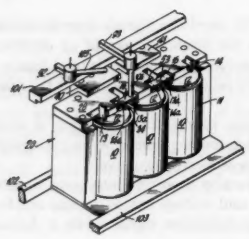
of said cylindrical body while said supply means carriages are self-propelled.

4,322,597

METHOD AND APPARATUS FOR INTERCONNECTING ELECTROCHEMICAL CELLS FOR A BATTERY

John W. Hooke, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Jun. 30, 1980, Ser. No. 164,568
Int. Cl.³ B23K *11/10*
U.S. Cl. 219—91.1 **14 Claims**



1. A method for electrically interconnecting the terminals of plural electrochemical cells of a battery, the terminals projecting from a surface of each said cell, comprising:

providing a cell-holding fixture for receiving said plural cells in fixed relation relative to each other, said fixture having a conductive electrode disposed to be adjacent each terminal to be connected;

bending said terminals about said conductive electrodes so that the surfaces of said terminals lie generally in a common plane;

placing a conductive link over the exposed surfaces of said bent terminals so as to be in physical and electrical contact therewith; and

contacting said link and said fixture with respective welding electrodes to establish a circuit for the passage of welding current through the joint between the link and terminal in contact therewith and thereby to effect a weld connection at such joint.

5. Apparatus for electrically interconnecting the terminals of plural electrochemical cells for a battery, wherein the terminals extend from one surface of each cell, comprising:

a fixture for receiving and holding said cells in mutually fixed relationship, with said extending terminals exposed,

plural conductive electrodes carried by said fixture and respectively located adjacent the cell terminals to be interconnected, each said conductive electrode being adapted to carry welding current passing through the terminal which is adjacent thereto, and

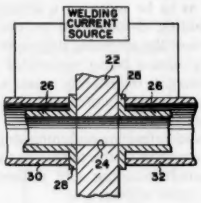
means for bending each of the terminals so that they lie generally in a common plane and in close proximity to said conductive electrode, said bent terminals being adapted to electrically contact said conductive electrode during passage of welding current through the terminal.

4,322,598

METHOD FOR FORMING A CONDUIT EXTENDING THROUGH AND BEYOND OPPOSITE SIDES OF A HOUSING WALL

Robert H. Blair, Bay City, Mich., assignor to RWC Inc., Bay City, Mich.

Filed Nov. 12, 1980, Ser. No. 206,057
Int. Cl.³ B23K *11/02, 11/32*
U.S. Cl. 219—107 **4 Claims**



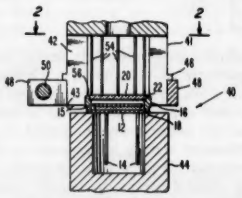
1. The method of forming a conduit extending through and beyond opposite sides of a housing wall comprising the steps of forming a bore of the desired internal diameter of said conduit through the housing wall, forming a radially outwardly projecting peripheral flange at one end of each of a pair of tubes having the desired internal diameter of said conduit, placing the flanges of said tubes in face-to-face engagement with said wall at opposite sides thereof with said tubes in coaxial alignment with said bore, electrically connecting said flanges in series with each other to a source of welding current, and simultaneously welding said flanges to said wall.

4,322,599

APPARATUS FOR RESISTANCE WELDING OF AN ELECTRO-OPTIC DEVICE HOUSING

Rene E. Cardinal, Montreal, Canada, assignor to RCA, Inc., Toronto, Canada

Division of Ser. No. 971,909, Dec. 21, 1978, Pat. No. 4,217,683.
This application Apr. 28, 1980, Ser. No. 144,051
Claims priority, application Canada, Oct. 23, 1978, 313897
Int. Cl.³ B23K *11/30*
U.S. Cl. 219—119 **3 Claims**



1. Apparatus for resistance welding a cap, having a wall and a window with a heat sensitive glass to metal seal mounted therein, to a header to form a housing which consists essentially of:

a collet electrode comprising a cylindrical tube having at least one open end, a lip extending radially outward from the outside surface of the tube and around the periphery of the tube and positioned a distance from the open end of

the tube such that a tightening means mounted on and supported by the lip does not extend beyond the open end of the tube, said tube having an interior diameter sufficient to permit the insertion of the cap into the tube and to make direct electrical and thermal contact between said tube and the cap, and multiple slots extending a distance along the length of the tube from the open end and extending from the inside surface to the outside surface of the tube;

a tightening clamp mounted circumferentially about the outside surface of the tube, supported on the lip and extending towards the open end of the tube, wherein the tightening clamp is a source of a circularly symmetric compressive force sufficient to hold the cap and maintain the glass to metal seal under compression;

a second electrode axially disposed at the open end of the tube to force the header against the open end of the cap; and

electrical means attached to the second electrode and the collet electrode wherein the electrical means are a source of electrical energy sufficient to weld the cap to the header.

4,322,600

METHOD AND APPARATUS FOR FORMING MICROCAVITIES ON THE SURFACE OF A ROLLING MILL ROLL

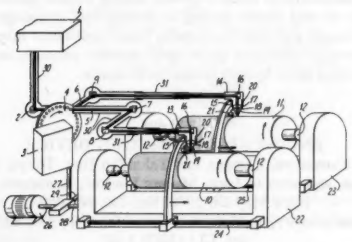
Jean Crahay, Francorchamps, Belgium, assignor to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

Filed Dec. 31, 1979, Ser. No. 108,578

Claims priority, application Luxembourg, Jan. 15, 1979, 80792

Int. Cl.³ B23K *26/06, 26/14*

U.S. Cl. 219—121 LK **22 Claims**



1. Apparatus for forming microcavities on respective surfaces of first and second rolling mill rolls, comprising: a continuous laser; a rotary disc for dividing the laser beam into two intermittent beams, the periphery of the disc having a series of reflecting regions separated from one another by a series of transmitting regions; means for rotating the disc about an axis which is inclined with respect to the direction of the continuous laser beam, with the disc periphery intercepting the laser beam; a first marking head containing a first focusing lens for focusing a laser beam at an area on said surface of the first roll, which surface is to be moved relative to the marking head so that said area moves along the roll surface; a second marking head containing a second focusing lens for focusing a laser beam at an area on said surface of the second roll; and deflecting means for transmitting at least one of the intermittent beams from the disc to the first focusing lens and for transmitting the other of the intermittent beams from the disc to the second focusing lens.

4,322,601

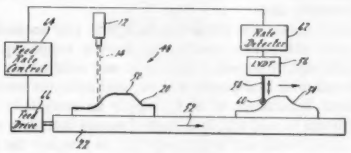
SURFACE ALLOYING METHOD AND APPARATUS USING HIGH ENERGY BEAM

Richard A. Serlin, 10 Barbour La., Bloomfield Hills, Mich. 48013

Division of Ser. No. 933,241, Aug. 14, 1978, Pat. No. 4,212,900, which is a continuation of Ser. No. 792,344, Apr. 29, 1977, abandoned. This application Jan. 17, 1980, Ser. No. 112,955

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LE **9 Claims**



1. An apparatus for forming a surface alloy between a contoured substrate and an alloying material placed on the surface thereof comprising:

means for producing a beam of high intensity energy; and

means for directing said beam of high intensity energy at said material for a predetermined short period of time, and for traversing said beam relative to the surface of said substrate such that the rate of traverse is varied in accordance with the contour of said substrate;

the intensity of said high intensity beam and the duration of said predetermined short period of time being selected to: (1) melt said material during said predetermined short period of time, (2) cause alloying of said material with said substrate in a surface zone thereof, and (3) limit the amount of thermal energy transmitted to said substrate to prevent substantial heating of said substrate below said surface zone and to allow rapid solidification of said material thereafter due to the dissipation of thermal energy into said substrate.

4,322,602

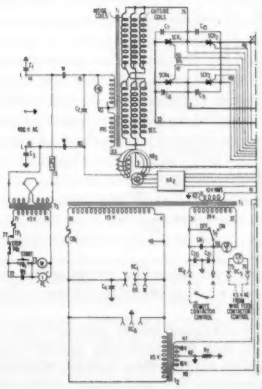
SQUARE WAVE POWER SUPPLY FOR ARC WELDING

Franklin J. Grist, Appleton, Wis., assignor to Miller Electric Manufacturing Company, Appleton, Wis.

Filed Jan. 23, 1981, Ser. No. 227,910

Int. Cl.³ B23K *9/09*

U.S. Cl. 219—130.33 **10 Claims**



1. A controllable power supply for supplying substantially square waves of current to a welding arc, said power supply

being a constant current A.C. power source controlled in a constant voltage mode and comprising:

a single phase, A.C. power source having primary and secondary circuits;

a thyristor bridge circuit connected in series between said source secondary circuit and said arc and including first and second controllable alternately conducting current paths for supplying current in respective opposite and mutually exclusive polarities to said arc;

an inductor connected in said current paths such that the arc current supplied from said source flows in the same direction in series through said inductor irrespective of the arc currents; and

control means for rendering said first and second current paths alternately conducting thereby supplying substantially square waves of current to said welding arc synchronized with said power source, said inductor having sufficient inductance so as to supply an essentially constant current to said arc; said control means including a voltage control feedback loop connected to monitor the arc voltage, compare the arc voltage with a reference voltage, and adjust the times when said first and second current paths are rendered conductive so as to cause said arc voltage to become equal to said reference voltage, and a current feedback loop connected to monitor the arc current and superimpose a negative control signal on the comparison of said arc voltage with said reference voltage, the response time of said voltage feedback loop being insensitive to short instantaneous perturbations whereby the output voltage is regulated in the long term with high gain.

4,322,603

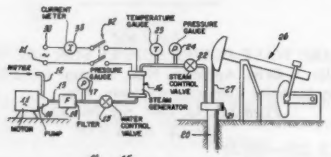
ELECTRODE STEAM GENERATOR SYSTEM FOR SECONDARY OIL RECOVERY

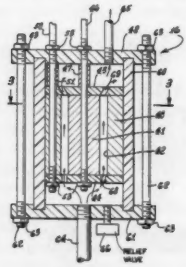
George L. Bright, Irvine, Calif., assignor to American Resources Corporation Ltd., British Virgin Isls.

Filed Mar. 14, 1980, Ser. No. 130,468

Int. Cl.³ H05B *3/60;* **F22B** *1/30;* **E21B** *36/00, 43/24*

U.S. Cl. 219—278 **2 Claims**





1. In a ground level system for secondary oil recovery from an oil well having a casing extending to the earth's surface, the combination of:

an electrically energized steam generator unit positioned at the surface, said unit including spaced concentric electrodes with an annular flow passage therebetween, and a housing enclosing said electrodes, said housing having a water inlet for supplying water to said flow passage and a steam outlet for receiving steam from said flow passage;

first means for connecting an electric power supply to said electrodes;

a water pump having an inlet and an outlet;

second means for connecting a water source to said pump inlet;

third means for connecting said pump outlet to said generator unit water inlet;

fourth means for connecting said generator unit steam outlet to a well casing at the surface; and

means for controlling water flow from said pump to said generator unit and means for controlling steam flow from said generator unit to said casing for controlling steam pressure without requiring control of electric current and voltage;

said generator unit including:

first and second end plates of electrical insulating material positioned at opposite ends of said electrodes;

an open-ended sleeve of electrical insulating material positioned around said electrodes and plates;

first and second end caps of electrical insulating material positioned at opposite ends of said sleeve with said water inlet being provided in said first end cap and said water outlet being provided in said second end cap;

means for clamping said end caps and sleeve together to form said housing;

means for clamping said first end plate, electrodes, second end plate and second cap together, including a first electrical conducting rod passing through said first plate, the outer of said electrodes, said second plate and said second cap, and a second electrical conducting rod passing through said first plate, the inner of said electrodes, said second plate and said second cap, and first and second electrically insulative spacers about said rods between said second plate and second cap with said clamping means compressing together said first plate, first and second electrodes, second plate, first and second spacers, and second cap, without other components or gaps therebetween, with said second end plate spaced from said second end cap by said spacers to define a steam outlet space and with said first plate spaced from said first cap to define a water inlet space, said rods forming said first means for connecting an electric power source to said electrodes;

each of said plates having a plurality of openings therethrough defining flow paths from said water inlet space through said first plate, said annular passage, and said second plate to said steam outlet space.

4,322,604

ENGINE START ASSISTING DEVICE

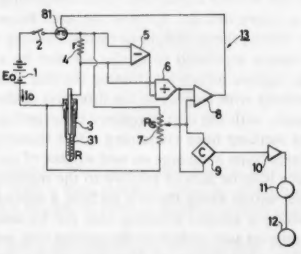
Hideo Kawamura, Yamato, and Takahiko Itou, Tokyo, both of Japan, assignors to Isuzu Motors Limited, Kanagawa, Japan

Filed May 24, 1978, Ser. No. 909,089

Claims priority, application Japan, May 24, 1977, 52/60208

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—497 **2 Claims**



1. In an engine starting assistance device of the type in which a glow plug having a heat generating element therein is heated by a current from a vehicle power supply to a desired set

temperature in order to aid in starting said engine, the improvement characterized in that:

said heat generating element of said glow plug has only a positive temperature coefficient and has a resistance sufficiently low to enable said glow plug to be heated by the current to a desired set temperature of approximately 800° C. in a period of time less than 10 seconds; and

said heat generating element of said glow plug has a known set resistance at said desired set temperature; and comprising

detecting means for detecting the resistance of said heat generating element of said glow plug and for producing a control signal when the detected resistance equals said set resistance, and control means responsive to said control signal for intermittently interrupting the current flowing through said heat generating element;

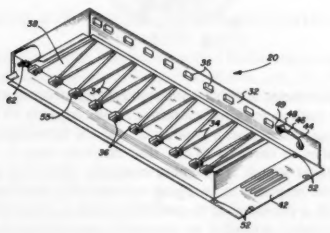
said detecting means comprising: a set resistor having a resistance equal to said set resistance; comparator means, responsive to voltage signals derived from said heat generating element and from said set resistor, for producing said control signal; a fixed detecting resistor connected in series with said heat generating; a subtractor circuit connected across said detecting resistor; and divider circuit means connected to the output of said subtractor circuit and to the junction of the series-connected detecting resistor and heat-generating element for producing said voltage signal derived from said heat-generating element.

4,322,605

HEATING DEVICE FOR SKIN PACKAGING MACHINE

David R. Stimens, Plano, Tex., assignor to Allied Automation, Inc., Dallas, Tex.

Filed Jun. 16, 1980, Ser. No. 159,616
Int. Cl.³ H05B 3/06
U.S. Cl. 219—532 **7 Claims**



1. In a packaging machine for applying a heat softenable film to a product utilizing an electric heat source, a heater unit comprising:

(a) a frame carrying a plurality of suspension points and having a covering portion spaced above said suspension points; and

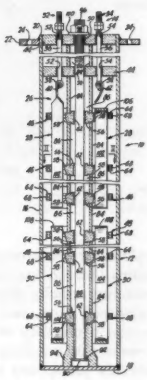
(b) an elongated replaceable ribbon heating element suspended from said suspension points within said frame in a predetermined configuration for providing a substantially uniform source of heat over a desired area for heating air surrounding said ribbon element to thereby heat the film, said elongated ribbon being free from contact with said frame except at a plurality of suspension points to allow said heater to reach operating temperature after electric current is supplied to said ribbon in not more than about two seconds yet permit said heater unit to cool to a temperature at which the heater has no effect on the heat softenable film for thermoforming purposes within a period of not more than about two seconds after the electric current is terminated thereby allowing said heater unit to remain stationary relative to the packaging machine during operation.

4,322,606

ELECTRICAL HEATING ELEMENT ASSEMBLY

William I. Bayly, Livingston, N.J., assignor to AGF Inc., Elizabeth, N.J.

Filed Apr. 28, 1980, Ser. No. 144,238
Int. Cl.³ H05B 3/02
U.S. Cl. 219—550 **17 Claims**

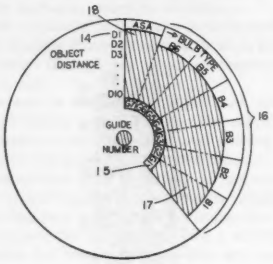


1. An electrical heating element assembly, comprising a plurality of electrical heating means extending axially along said assembly; a plurality of electrical insulators spaced apart axially along said assembly, each of said insulators including an inner section having an outer peripheral edge, an outer section disposed about and adjacent to said inner section and having an inner peripheral edge, receiving means provided in one of said peripheral edges for removeably receiving said plurality of electrical heating means, said receiving means including a plurality of slots, each of said slots extending axially through said one peripheral edge and being sized and shaped such that a corresponding one of said electrical heating means extends loosely and moveably therethrough without making substantial contact with either of said sections, whereby the natural expansion and contraction of said electrical heating means are substantially uninhibited by said insulators during the electrical energization and de-energization thereof, and securing means for releaseably securing said inner section to said outer section such that when said inner and outer sections are secured to each other they cooperate to completely surround each of said electrical heating means, whereby each of said insulators electrically insulates each of said electrical heating means from the other of said electrical heating means, and such that when said inner and outer sections are not secured to each other said electrical heating means may be radially withdrawn from said slots, whereby said electrical heating means can be removed from said insulators and replaced without completely disassembling said electrical heating element assembly; a plurality of spacers, each of said spacers being interposed between a corresponding pair of insulators; retaining means for retaining each of said insulators between a corresponding pair of adjacent spacers; and supporting means for supporting said electrical heating means, said supporting means supporting said electrical heating means substantially independently of said insulators at least when said electrical heating element assembly is arranged vertically.

4,322,607
CAMERA SETTING CALCULATOR FOR UNDERWATER COLOR PHOTOGRAPHY

Peter J. Diamondis, 255 Redwood Rd., Merritt Island, Fla. 32952

Filed Jun. 4, 1979, Ser. No. 45,221
Int. Cl.³ G06C 3/00
U.S. Cl. 235—64.7 11 Claims

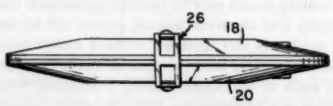


1. A film exposure calculator comprising in combination:
a lower display including thereon quantized aperture values displayed in intersecting radially disposed columns and circumferentially disposed rows, said lower display further including thereon a plurality of film speed values each paired with one of said columns; and
an upper display movably juxtaposed adjacent said lower display and including:
(a) a first window therein for displaying one of said film speed values;
(b) a second window therein for displaying said column of aperture values paired with said film speed value displayed by said first window, with said second window sized for displaying at least five adjacent ones of said columns of aperture values adjacent thereto;
(c) a column of distance factors radially disposed adjacent said second window in operative registration with adjacent ones of said rows; and
(d) a row of illumination factors circumferentially disposed adjacent said second window in operative registration with each of said columns,
whereby the display of a selected one of said film speed values by said first window will operatively space said column of said aperture values adjacent said distance factors and will operatively space said rows of said aperture values adjacent said illumination factors so as to display the correct exposure for the film as a function of distance.

4,322,608
METRIC-ENGLISH MEASUREMENT COMPARATOR DEVICE

Thomas K. McGourty, Adelaida Rte., Paso Robles, Calif. 93446

Filed Dec. 12, 1980, Ser. No. 215,671
Int. Cl.³ G06C 3/00
U.S. Cl. 235—85 R 7 Claims

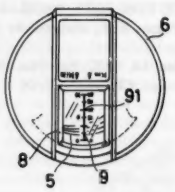


1. A device for converting between the metric and the English system of measurement, which comprises
a scale having a first circular scale on one side graduated according to a metric system of measurement and a second circular scale on the opposite side correlated with said first scale and graduated according to the corresponding English system of measurement,
said scales being coaxial with each other,
a U-shaped cursor straddling said sides of said scale disc,
means supporting said cursor for pivotal movement about the axes of said scales,
said cursor having a first index means moveable over said first scale and a second index means moveable over said second scale whereby positioning of one of said index means to indicate a measurement in one of said systems will cause the other of said index means to indicate a corresponding measurement in the other of said systems,
a third circular scale on said opposite side graduated according to a second English system of measurement,
said third scale being correlated with said first scale whereby positioning of said second index means to indicate a measurement according to said second English system will cause said first index means to indicate a measurement in the corresponding metric system on said first scale.

4,322,609
PEDOMETER ASSEMBLY

Yasuji Kato, Tokyo, Japan, assignor to Yamasa Tokei Meter Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1980, Ser. No. 124,867
Claims priority, application Japan, Jan. 14, 1980, 55-2743[U]
Int. Cl.³ G01C 22/00
U.S. Cl. 235—105 5 Claims



1. A pedometer assembly adapted for use in various types of exercises such as jogging, marathon, rope skipping or the like, comprising a base disc, a pendulum adapted to swing about an axis parallel to the axis of the disc at every step, a circular display panel which is mounted coaxially with said disc and rotatable in response to swinging movement of said pendulum and which is provided at its periphery with a cylindrical wall, said wall being provided or scored on its outer surface with graduations for indicating the number of repetitions, a proportional diagram provided on the surface of said panel and adapted to indicate the relation between the number of repetitions and the amount of exercises corresponding thereto, a casing for accommodating therein the aforesaid parts, a viewing window formed for said graduations in the upper portion of said casing, a second viewing window provided for said proportional diagram in front of said casing and a reference line provided for said diagram on said second viewing window.

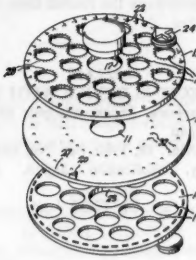
4,322,610
RECORDING DEVICE FOR GOLFER

Richard C. Randolph, Box 614, FPO Seattle, Wash. 98773

Filed Jul. 24, 1980, Ser. No. 171,808
Int. Cl.³ G06C 27/00
U.S. Cl. 235—114 9 Claims

1. A golf scoring device comprising first and second superimposed registering discs, means journaling said discs for relative rotation, said first disc having a plurality of apertures formed therein, a plurality of buttons each positioned in an aperture of said first disc, said first disc having spaced marginal indicia, each aperture being surrounded by spaced marginal

indicia, said second disc having an indicator at its projecting margin adjacent to marginal indicia of said first disc, said second disc having a circular series of equi spaced projections spaced inwardly from its margin, each button having a substantially cylindrical body journalled and axially adjustable in an aperture of said first disc and having an indicator correlated with aperture-surrounding indicia on said first disc, the inner portion of each button having a circumferential series of teeth, said buttons being normally positioned with the teeth thereof



clear of the projections of said second disc and being depressible into interdigital engagement with adjacent projections, whereby rotation of said second disc relative to said first disc causes rotation of all depressed buttons by interaction of the teeth thereof with the projections of said second disc to rotatively advance said depressed buttons and thereby indicate at indicator portions of depressed buttons and at the indicator of said second disc an accrued Nassau golf score and Nassau betting result.

4,322,611

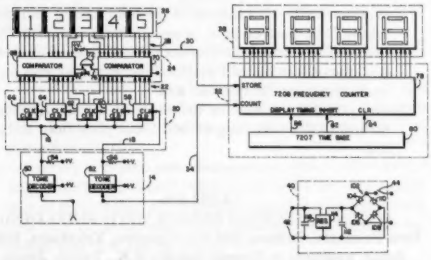
METHOD AND APPARATUS FOR DETECTING AND INDICATING DATA

Alan Edelman, 230 E. Walnut Park Dr., Philadelphia, Pa. 19120

Continuation-in-part of Ser. No. 60,670, Jul. 25, 1979, abandoned. This application Oct. 20, 1980, Ser. No. 198,924

Int. Cl.³ G06K *15/00*

U.S. Cl. 235—383 **9 Claims**



1. An apparatus for detecting and indicating data associated with a selected article having a unique numeric identification code from a plurality of data tones sequentially arranged in numeric order, each data tone being of a frequency determined by the data associated with an article having numeric identification code corresponding to the number of the data tone, each data tone being preceded by an incrementing tone of a first predetermined frequency, the apparatus comprising:

encoder means for generating a signal representative of the idenfication code of the selected article;

tone decoder means for receiving the incrementing tones and generating incrementing signals in response thereto;

counter means for receiving and counting the incrementing signals and for generating a signal representative of the count of the received incrementing signals;

comparator means for comparing the signal from the encoder means with the signal from the counter means;

frequency counter means for receiving the data tones and generating a display signal representative of the frequency of the received data tone when the comparator means identifies the compared signals as being the same; and

display means for receiving the display signal from the frequency counter means and displaying the data associated with the selected article.

4,322,612

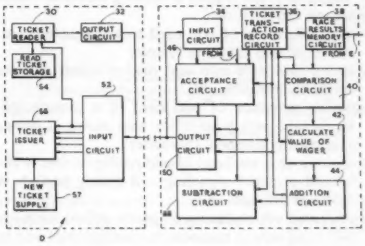
SELF-SERVICE WAGERING SYSTEM

Le Roy J. Lange, Towson, Md., assignor to General Instrument Corporation, Clifton, N.J.

Filed Oct. 22, 1979, Ser. No. 87,026

Int. Cl.³ G06F *7/02;* **A63B** *71/06*

U.S. Cl. 235—419 **81 Claims**

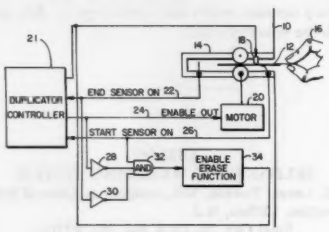


1. A self-service wagering system of the type incorporating a means for storing the credit balance and information relating to an outstanding wager previously placed on a completed race, for each of a plurality of transactions, and means for obtaining information relating to the results of a completed race, the system being adapted to accept a previously issued ticket bearing a transaction identification code and a form upon which information relating to a proposed wager on an upcoming race may be entered by the ticket holder, the system comprising: means for reading the ticket to obtain the identification code and entered information, if any, relating to the proposed wager; means for accessing the memory location corresponding to the read identification code to obtain stored credit balance and outstanding wager information, if any, for the identified transaction; means for obtaining the results of the race corresponding to the outstanding wager; means for comparing the outstanding wager information with the race results; means for calculating the value of the outstanding wager; means for adding said calculated value to the stored credit balance, to form an altered balance; means for accepting the proposed wager, if any; means for generating an identification code corresponding to said accepted wager; means for subtracting, from said altered balance, the value of said accepted wager to form an updated credit balance; means for storing, in a memory location corresponding to said identification code corresponding to said accepted wager, information concerning said updated credit balance and said accepted wager; and means for issuing a ticket bearing the identification code corresponding to said accepted wager, an acknowledgement of said updated credit balance, an acknowledgement of said accepted wager, if any, and a form upon which may be entered information relating to a further proposed wager on a race to take place subsequent to the upcoming race.

4,322,613
METHOD FOR TAMPER-PROOFING MAGNETIC STRIPE CARD READER

Ralph J. Oldenkamp, Oakland, Calif., assignor to Vendacopy, Inc., Foster City, Calif.

Filed Apr. 8, 1980, Ser. No. 138,389
Int. Cl.³ G06K *7/08, 13/00;* **G11B** *5/00;* **G06K** *5/00*
U.S. Cl. 235—449 **4 Claims**



1. A method for inhibiting tampering with a readable/writeable magnetic stripe card in a vending machine control system comprising the steps of:

sensing the entry of said card to a magnetic card reader/-writer of said machine system;

drawing said card into said reader/writer along a path of travel by a motor;

signaling presence of said card at a preselected position along said path whereupon said motor is turned off and said card is stopped; thereafter

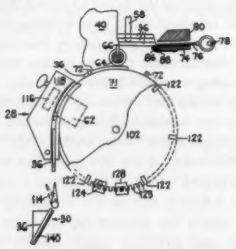
activating an erase head of said reader/writer in the absence of said presence signaling and during periods when said motor is off; and

erasing and not replacing magnetic information encoded on said card only in response to translation of said card along said path when said motor is off.

4,322,614
TICKET READER

Donald A. Sloan, Winston-Salem, and Carroll G. Perkins, Pilot Mountain, both of N.C., assignors to Consolidated Foods Corporation, Winston-Salem, N.C.

Filed Jan. 4, 1980, Ser. No. 109,479
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—458 **9 Claims**

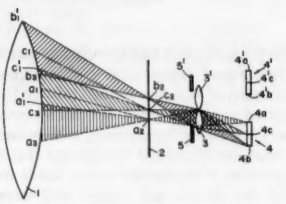


1. In a portable, lightweight system for sequentially feeding and sensing a plurality of records having specific data encoded thereon from a supply means retaining a plurality of encoded records in stacked relation; transport means for continuously removing records sequentially from said supply means and conveying the records along a predetermined path, said transport means including feed means for removing a record from said supply means and conveying the record to an escapement means, said escapement means including means for slidably receiving a record as it is advanced in a first direction into said receiving means by said feed means, said feed means including a blade member for displacing a record from said supply means and into said receiving means, rotatable transport wheel means rotatable in a direction generally opposite to said first direction and having at least one drive member for engaging the record and conveying the record to a data sensing station, said escapement means including a displaceable member for directing the record towards said transport wheel for engagement by said drive member, and means for driving said feed means, said transport wheel and said escapement means directing member in timed relation to convey the record from the supply means to said drive member.

4,322,615
FOCUS DETECTING DEVICE WITH SHIELDING

Toru Fukuhara, Isehara, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 18, 1980, Ser. No. 131,493
Claims priority, application Japan, Apr. 21, 1979, 54/52771[U]
Int. Cl.³ G01J *1/36*
U.S. Cl. 250—204 **7 Claims**



1. A focus detecting device for a camera in which, from an object light passed through a focus plate removably provided on the image formation plane of a phototaking lens, a first image and a second image are formed by a pair of re-imaging optical systems and the in-focus condition of said phototaking lens with respect to an object is detected from the variations in position of said first image and said second image with respect to a pair of photoelectric converters disposed on or near the focal planes of said re-imaging optical systems, said focus plate being provided with a field lens, the improvement comprising:

shield means (**5**, **5'**) provided for shielding, substantially symmetrically with respect to the optic axis of said phototaking lens, part of light beams forming said first image and said second image formed on said pair of photoelectric converters by said phototaking lens and said pair of re-imaging optical systems; and

means (**19**, **19'**, **5***a*, **5'***a*) for driving said shield means in response to the mounting of said focus plate onto the camera.

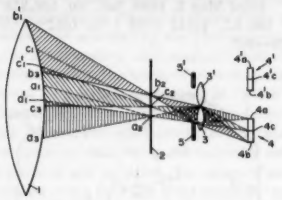
4,322,616
FOCUS DETECTING DEVICE WITH SHIELDING

Toru Fukuhara, Isehara, and Ken Utagawa, Yokohama, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 18, 1980, Ser. No. 131,494
Claims priority, application Japan, Mar. 22, 1979, 54/33586; Apr. 11, 1979, 54/46925[U]
Int. Cl.³ G01J *1/36*
U.S. Cl. 250—204 **10 Claims**

1. A focus detecting device in which, from an object light passed through an image forming optical system, a first image and a second image are formed by a pair of re-imaging optical systems and the in-focus condition of said image forming optical system with respect to an object is detected from the variations in position of said first image and said second image with respect to a pair of photoelectric converters disposed on or near the focal planes of said pair of re-imaging optical systems, the improvement comprising:

shield means (5, 5') provided for shielding, substantially symmetrically with respect to the optic axis of said image forming optical system, part of light beams forming said



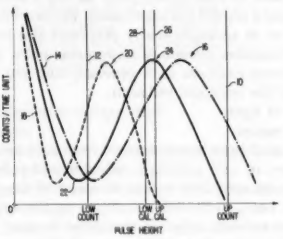
first and second images formed on said pair of photoelectric converters by said image forming optical system and said pair of re-imaging optical systems.

4,322,617

METHOD AND APPARATUS FOR CALIBRATING A GAMMA COUNTER

Stephen D. Parker, Erlanger, Ky., assignor to Fleit & Jacobson, Washington, D.C.

Filed Feb. 12, 1979, Ser. No. 11,702
Int. Cl.³ G01D *18/00*; G01T *1/20*
U.S. Cl. 250—252 **10 Claims**



1. A method for calibrating a gamma counter of the type employing a scintillation counter with a high-voltage power supply for detecting the presence of a radioisotope, the method comprising the steps of:

(a) providing a pulse-height analyzer connected to the output of said scintillation counter,

(b) selecting a first pair of upper and lower pulse height amplitude levels in said pulse-height analyzer such that the spectrum of said radioisotope lies between said first pair of levels,

(c) selecting a second pair of upper and lower pulse-height amplitude levels in said pulse-height analyzer, said second pair of levels being of substantially smaller width than said first pair of levels and lying approximately midway between said first pair of levels,

(d) adjusting said high-voltage power supply to a first setting,

(e) obtaining a first number of counts, detected by said scintillation counter as occurring within said second pair of levels, within a predetermined time period,

(f) saving said first number of counts as a saved value,

(g) adjusting said high-voltage power supply to a second setting different from said first setting,

(h) obtaining a further number of counts, detected by said scintillation counter as occurring within said second pair of levels, within said predetermined time period,

(i) comparing said further number of counts with said saved value to determine the larger thereof,

(j) if said further number of counts is larger than said saved value, substituting said further number of counts as said saved value,

(k) repeating said steps (g) through (j) for a predetermined number of times to determine, an overall maximum of said numbers of counts and said high-voltage setting corresponding thereto,

(l) setting said high-voltage power supply to said high-voltage setting corresponding to said overall maximum of said number of counts, and

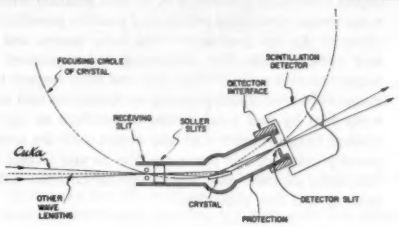
(m) setting said pulse-height analyzer to detect counts lying between said first pair of pulse-height amplitude levels.

4,322,618

DIFFRACTED BEAM MONOCHROMATOR

Ronald Jenkins, Peekskill, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 1,104, Jan. 5, 1979, abandoned. This application Dec. 18, 1980, Ser. No. 217,740
Int. Cl.³ G01M *23/20*
U.S. Cl. 250—272 **10 Claims**



1. A focusing crystal monochromator assembly for receiving diffracted polychromatic x-radiation, monochromatizing said diffracted polychromatic x-radiation and focusing the resultant monochromatized x-radiation at a detector, said monochromator assembly comprising:

a collimator situated in the path of said polychromatic x-radiation for limiting the axial diversion of said polychromatic x-radiation and slidably removable from the path of said polychromatic x-radiation;

a monochromator crystal fixedly supported in the path of the collimatized polychromatic x-radiation produced by said collimator for directing monochromatized x-radiation toward an x-radiation detector;

a base, attachable to the 2θ arm of a goniometer, having first and second substantially linear portions attached to each other and forming an oblique angle therebetween;

a first support member extending transversely outwardly from said base and having a channel for supporting the collimator in the path of said diffracted polychromatic x-radiation and slidably removable from said path;

a second support member extending transversely outwardly from said base for fixidly supporting the monochromator crystal in the path of the polychromatic x-radiation;

the said second support member being positioned between said first support member and a detector for detecting the polychromatic x-radiation monochromatized by said monochromator crystal.

4,322,619

OPTICAL MASKING RADIOGRAPHY

James A. Nelson, and James A. Sorenson, both of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

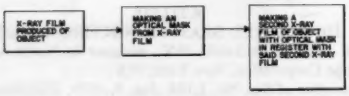
Filed Nov. 9, 1979, Ser. No. 93,027
Int. Cl.³ G03B *41/16*
U.S. Cl. 250—323 **14 Claims**

1. A method of radiography comprising:

the making of a first x-ray film of an object with said object

and x-ray means positioned in first positions respectively to produce an image reflective of said object on said film, said object being of the type that said image on said film has underexposed portions with low optical contrast;

the making of an optical mask film from said first x-ray film by transferring the image of said object from said first x-ray film onto a photographically positive print film with duplicating means to produce an optically positive image reflective of said object with exposed portions related to the underexposed portions of said first x-ray film;


X-RAY FILM PRODUCED OF OBJECT
MAKING AN OPTICAL MASK FROM X-RAY FILM
MAKING A SECOND X-RAY FILM OF OBJECT WITH OPTICAL MASK IN REGISTER WITH SAID SECOND X-RAY FILM

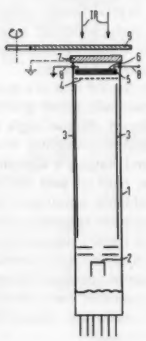
the making of a second x-ray film of said object with said object positioned essentially in its first position with said x-ray means positioned in a second position preselected to relate to the first position of said x-ray means, and with said optical mask film positioned and registered with respect to said second x-ray film and with respect to the image reflective of said object to be formed on said second x-ray film by said x-ray means to produce an optically masked image reflective of said object with the underexposed portions of said first x-ray film on said second x-ray film more exposed with higher optical contrast with respect to said first x-ray film.

4,322,620

CAMERA TUBE FOR THERMAL IMAGING

Peter-Wilhelm Steinhage, Wiesbaden, Fed. Rep. of Germany, assignor to Heimann GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Apr. 4, 1980, Ser. No. 137,278
Claims priority, application Fed. Rep. of Germany, May 30, 1979, 2922056
Int. Cl.³ H01J *31/50*
U.S. Cl. 250—333 **6 Claims**



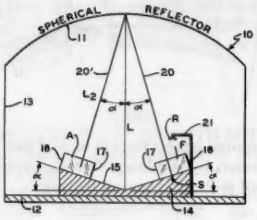
1. A camera tube for thermal imaging wherein a mechanically moving thermal radiation modulator is arranged in front of an entrance window of the camera tube, comprising: an envelope; an entrance window at one end of the envelope and having an electrically conductive material; target means adjacent the entrance window for converting the thermal image; an electron beam means in the envelope for scanning the target means; and the entrance window being electrically isolated from the target means so as to electrically shield the target means from the moving thermal radiation modulator.

4,322,621

FOLDED PATH ABSORPTION CELL GAS SENSOR

Roger L. Aagard, Richfield, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 5, 1980, Ser. No. 146,818
Int. Cl.³ G01J *1/00, 1/42;* G02B *5/10*
U.S. Cl. 250—343 **11 Claims**



1. A folded path optical type absorption cell gas sensor comprising:

an absorption cell gas sensor enclosure;

a spherical shaped reflector forming part of the enclosure of the absorption cell;

said enclosure further including a base section having mounted thereon an annular shaped mirror complex, said annular mirror complex comprising a plurality of mirror pairs, each of said mirror pairs having a first mirror element and a second mirror element, the first mirror element being set at an angle nearly perpendicular to the second mirror element in each of said mirror pairs, and wherein said mirror pairs are each generally directed towards the apex of the spherical reflector;

a source of light;

detector means;

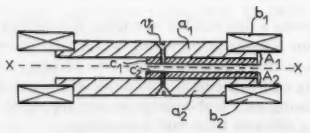
a multifolded light beam directed from said source towards the apex of said spherical reflector and reflected therefrom onto said first mirror element of the first of said mirror pairs, reflected therefrom to the second mirror element thereof, reflected therefrom by way of spherical reflector to the first mirror element of the second mirror pair, the multifolding sequence continuing until the light beam traverses all of said plurality of mirror pairs and is finally reflected to said detector means.

4,322,622

DEVICE FOR THE ACHROMATIC MAGNETIC DEFLECTION OF A BEAM OF CHARGED PARTICLES AND AN IRRADIATION APPARATUS USING SUCH A DEVICE

Dominique Tronc, Buc, France, assignor to C.G.R. MeV, Buc, France

Filed Apr. 3, 1980, Ser. No. 136,820
Claims priority, application France, Apr. 3, 1979, 79 08370
Int. Cl.³ G21K *1/08;* H05H *00/00*
U.S. Cl. 250—396 ML **10 Claims**



1. A device for the achromatic magnetic deflection of a beam of charged accelerated particles, comprising at least one electromagnet having pole pieces delimiting air gaps in which are created magnetic fields having the same direction and specific values so as to obtain paths of particles having the

form of loops whose lengths are a function of the momentum of the particles, said pole pieces forming a first, a second and a third magnetic sector disposed one after the other and joined together, the whole of these magnetic sectors having a plane of symmetry perpendicular to the plane of the mean path of said beam of particles, and intersecting this plane along an axis XX, forming an axis of symmetry, and magnetic deflection device presenting successively to the beam of particles a flat input face E, a first curved face F_1, a second curved face F_2 and a flat output face S, said input E and output S faces forming therebetween an angle 2α, said identical curved faces F_1 and F_2 as well as said axis of symmetry XX being substantially orthogonal to the different paths of said particles, the values of said magnetic inductions created in the first and third magnetic sectors being respectively equal to KB_o, B_o being the value of the magnetic induction in the second magnetic sector and K a numerical co-efficient less than 1.

4,322,623

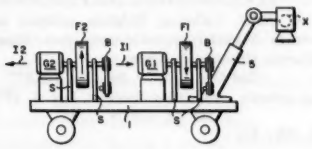
MOBILE X-RAY APPARATUS

John K. Grady, 277 Baker Ave., West Concord, Mass. 01781

Filed May 5, 1980, Ser. No. 146,526

Int. Cl.³ H05G *1/00*

U.S. Cl. 250—402 **8 Claims**



1. X-ray apparatus comprising:

motor means;

flywheel means driven by the motor means for a relatively long energy storage period;

electric generator means driven by the flywheel means and having a voltage output;

an X-ray tube coupled to the generator output to draw power from the flywheel and generator during a relatively short exposure period; and

means for regulating the voltage output of the generator means connected to and responsive to the voltage output to maintain the output constant when the flywheel means change speed as power is drawn therefrom.

4,322,624

X-RAY TUBE HAVING A MAGNETICALLY SUPPORTED ROTARY ANODE

Gerardus A. A. F. Cornelissen; Hendrik J. Gerrits, and Evert M. H. Kamerbeek, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 10, 1980, Ser. No. 129,135

Claims priority, application Netherlands, Mar. 30, 1979, 7902477

Int. Cl.³ H05G *1/70*

U.S. Cl. 250—406 **5 Claims**

1. A rotary anode type X-ray tube comprising:

a tube envelope;

a shaft having an axis;

an anode, attached to the shaft; and

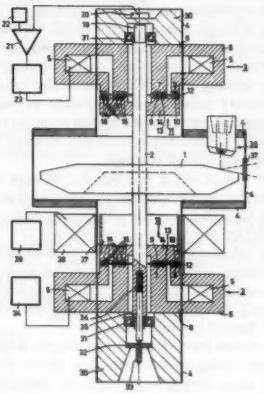
a magnetic bearing for rotatable journaling the shaft within the envelope of the X-ray tube, said magnetic bearing comprising:

a rotor, attached to the shaft, said rotor having at least a first face extending transverse to the shaft; and

a stator having at least one magnetic yoke which intersects the envelope of the tube, said yoke being magnetizable by a magnet outside the tube envelope, said yoke having at least one face extending transverse to the shaft, said yoke face being axially spaced from said first rotor face by a gap; characterized in that:

the first rotor face comprises two pole faces;

the yoke face comprises first and second pole faces arranged opposite the rotor pole faces, there being a pole gap between each opposing yoke pole face and rotor pole face;



the magnetic bearing forms a first magnetic circuit with the rotor, yoke and the pole gaps; and

at least one rotor pole face and the yoke pole face opposite thereto each have a like pettern of a plurality of axially-extending annular portions which are radially separated from one another by grooves which are concentric with the shaft.

4,322,625

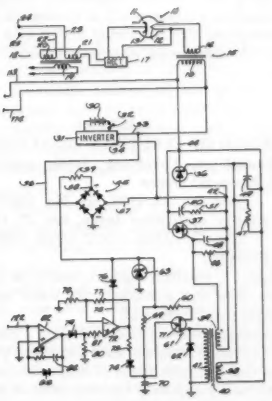
ELECTRON EMISSION REGULATOR FOR AN X-RAY TUBE FILAMENT

Herbert E. Daniels, Brown Deer, and Harvey G. Randall, Oconomowoc, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,423

Int. Cl.³ H05G *1/30*

U.S. Cl. 250—409 **4 Claims**



1. In x-ray apparatus including an x-ray tube having a filament and an anode, a filament transformer having a primary winding a secondary winding across which the filament is connected, a high voltage transformer having a primary wind-

ing and a secondary winding connected for applying a high voltage between said anode and filament during an x-ray exposure, said last named secondary winding providing a loop circuit through which tube current between the anode and filament flows,

a circuit for controlling the emission capability of said filament before and during an x-ray exposure to thereby regulate said tube current during an exposure comprising:

a voltage regulator having input means for being supplied from a voltage source and output means for applying alternating voltage to the primary winding of said filament transformer and means for controlling said regulator,

means for sensing the RMS value of the voltage applied to said primary winding continuously during preexposure and exposure intervals and means responsive to the sensed voltage by producing a first d-c voltage signal proportional to said sensed voltage,

means for producing a second d-c voltage signal proportional to the current desired through said secondary winding and said filament for preheating said x-ray tube filament during the preexposure interval,

means for producing a voltage signal proportional to the high voltage which is to be applied between said x-ray tube anode and filament during an exposure and means for producing a third d-c voltage signal corresponding with the last named voltage signal,

summing means having input and output means,

a circuit including a first switching device that is in a conductive state during a preexposure interval for applying said first, second and third voltage signals to the input means of said summing means, said summing means being operative to produce a signal to which said means for regulating responds by regulating said voltage source and, hence, the voltage applied to said filament transformer primary winding,

means for producing a signal representative of the magnitude of the tube current desired in said loop circuit and between said anode and filament during an exposure and for producing a signal representative of the magnitude of the tube current that is flowing after high voltage is applied to initiate an exposure,

means for producing an output signal representative of the difference between said signal magnitudes,

a circuit including a second switching device that is in a nonconducting state during said preexposure interval, said circuit being connected for applying said output signal to the input means of said summing means for it to provide the signal to which said regulating means responds by regulating said filament transformer voltage, and

means responsive to current flow through said x-ray tube by switching said first switching device to a nonconductive state and said second switching device to a conductive state.

4,322,626

METHOD OF ELECTRON BEAM EXPOSURE

Kenichi Kawashima, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 25, 1980, Ser. No. 162,877

Claims priority, application Japan, Jun. 27, 1979, 54/81075

Int. Cl.[3] A61K *27/02*; G01K *1/08*

U.S. Cl. 250—492.2 **10 Claims**

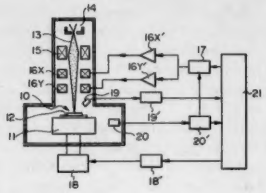
1. A method of electron beam exposure, for directly writing patterns on chips of a semiconductor wafer with an electron beam, comprising the steps of:

(a) apportioning each of said chips into a plurality of exposure fields and forming at least one alignment mark in only one of said exposure fields of each said chip;

(b) preliminarily adjusting the alignment of the entire wafer by means of the electron beam;

(c) adjusting the alignment of an individual one of said chips by means of the electron beam in accordance with said alignment mark on said individual chip;

(d) successively exposing said exposure fields of said individual chip to the electron beam, thereby exposing desired portions of said chip; and



(e) successively exposing the remaining ones of said chips by performing the above defined steps (c) and (d) for each chip, whereby desired portions of the entire wafer are exposed.

4,322,627

APPARATUS FOR MONITORING THE SURFACE OF THE CHARGE OF A SHAFT FURNACE

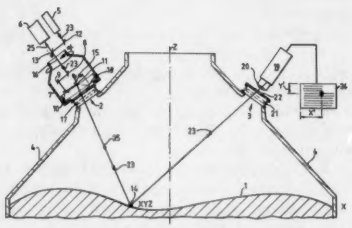
Robert A. Pirlet, Embourg, Belgium, assignor to Centre de recherches Metallurgiques-Centrum voor Research in de metallurgie, Brussels, Belgium

Filed Dec. 6, 1979, Ser. No. 100,977

Claims priority, application Belgium, Dec. 6, 1978, 872578

Int. Cl.[3] G01N *21/86*

U.S. Cl. 250—561 **15 Claims**



1. Apparatus for monitoring the surface of the charge of a shaft furnace, disposed outside at least one aperture in a furnace wall above the surface of the charge, the apparatus comprising:

(a) a telemetric optical-radiation transmitter;

(b) a telemetric receiver having a surface sensitive to the radiation of the transmitter in a selected range of wavelengths;

(c) means for scanning at least part of the surface of the charge, comprising:

(i) an assembly of deflectors, at least one of which is movable with respect to the others, enabling the transmission of optical rays along a folded optical path from the transmitter to the receiver via the surface of the charge, one portion of the optical path being coincident with or parallel to the optical axis of at least one of the transmitter and the receiver,

(ii) means for rotating the movable deflector about an axis perpendicular to a plane containing the optical path, and

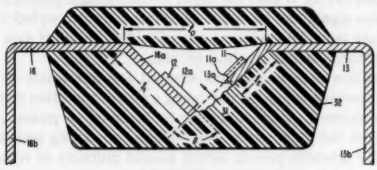
(iii) means for rotating the assembly of deflectors about an axis located in the said plane coincident with or parallel to one portion of the optical path; and

(d) means for filtering the optical radiation.

4,322,628
PHOTO-ELECTRIC COUPLING DEVICE

Toshiaki Tanaka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 27, 1979, Ser. No. 97,640
Claims priority, application Japan, Dec. 19, 1978, 53-155808
Int. Cl.³ G02B *27/00*
U.S. Cl. 250—551 **12 Claims**



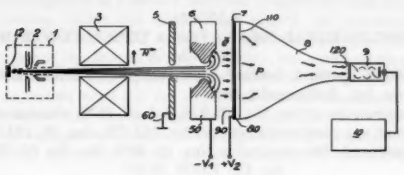
1. A photo-electric coupling device comprising:
a light-emitting element;
a first electrical lead having a first planar elongated portion carrying said light-emitting element;
first means, in cooperation with said first lead, for enabling said light-emitting element to be energized, said first means including an electrode portion mounted on one surface of said light-emitting element opposite said first lead;
a light-responsive element having a light-sensitive surface and being disposed such that at least one portion of the light emitted from a surface of the light-emitting element different from said one surface impinges approximately perpendicularly upon said sensitive surface;
a second electrical lead having a second planar elongated portion carrying said light-responsive element;
second means for enabling said light-responsive element to develop an electrical signal responsive to light emitted from said light-emitting element; and
a protective housing of non-light transmissive material substantially surrounding said light-emitting and light-responsive elements, while leaving a light-transmissive space therebetween;
said first lead having a first base portion from which said first elongated portion extends, and
said second lead having a second base portion disposed in a co-planar relation with said first base portion, said second elongated portion extending from said second base portion;
said first and second elongated portions being bent out of the plane of the base portions at respective edges of the base portions, said first and second elongated portions both being bent to the same side of said plane;
the second elongated portion being longer than said first elongated portion and disposed approximately perpendicularly to an imaginary plane containing said first elongated portion.

4,322,629
MASS SPECTROGRAPH

Jean-Francois Eloy, Saint Ismier, France, and Eberhard Unsold, Munich, Fed. Rep. of Germany, assignors to Commissariat a l'Energie Atomique, Paris, France and Gesellschaft fur Strahlen und Umweltforschung mbH, Neuherberg, Fed. Rep. of Germany

Continuation of Ser. No. 958,721, Nov. 8, 1978, abandoned. This application Aug. 13, 1980, Ser. No. 177,775
Claims priority, application France, Nov. 15, 1977, 77 34271
Int. Cl.³ B01D *59/44*
U.S. Cl. 250—299 **17 Claims**

1. A mass spectrograph providing a spatial analysis of a sample comprising: a pulsed ion source, means for analyzing the ions emitted by said source, said means being of the type combining magnetic separation and measurement of the time of

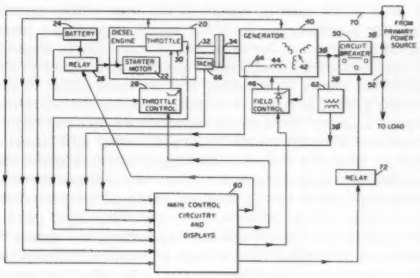


flight, and a panoramic ion detector which collects all ions of different initial energies but having the same m/nq ratio.

4,322,630
ELECTRICAL POWER GENERATING SYSTEM

John R. Mezera, Glendale Heights; James T. Dimitrios, Barrington, both of Ill., and Graham R. Phillips, St. Louis, Mo., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Mar. 17, 1980, Ser. No. 130,784
Int. Cl.³ H02J *3/08*
U.S. Cl. 290—40 C **5 Claims**



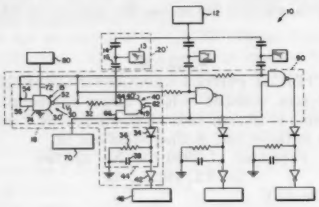
1. An electrical power generating system for providing both standby power and auxiliary on-line power to a plurality of main electrical power conductors comprising:
(a) a prime mover for converting a source of energy into a mechanical output,
(b) an electrical generator having a plurality of output windings and a field winding for exciting said output windings, said generator being coupled to said mechanical output,
(c) means for electrically connecting said generator output windings with said main power conductors,
(d) means for sensing the voltage and current provided by said generator output windings,
(e) means for sensing the voltage in at least one of said main power conductors, and
(f) means for sensing the phase position of said generator output voltage and current and said voltage in said main electrical power conductor, whereby said generator output may be added in phase to the power in said main power conductors, said means for sensing the phase position of said generator output voltage further including means coupled to said sensed output voltage for converting the output voltage wave form to a wave form closely approximating a square wave, means for converting said wave form closely approximating a square wave to a plurality of unidirectional square voltage pulses, means coupled to said unidirectional square voltage pulses for converting said square voltage pulses to a plurality of unidirectional short duration voltage pulses, and means coupled to said short duration unidirectional voltage

pulses for storing said pulses for transmittal to a central processing unit.

4,322,631
IMPLEMENTAL MEANS FOR A TOUCH CONTROL SYSTEM

Walter R. Spofford, Bedford, Mass., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Continuation of Ser. No. 929,030, Jul. 28, 1978, abandoned, which is a continuation of Ser. No. 762,779, Jan. 25, 1977, abandoned. This application Nov. 23, 1979, Ser. No. 96,737
Int. Cl.³ H01H *36/00*
U.S. Cl. 307—39 **13 Claims**

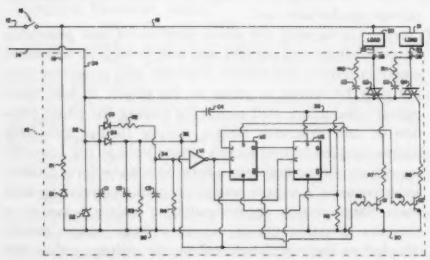


1. In a touch control system of the type which includes means for supplying an electrical signal, capacitance means coupled to said means for supplying for capacitively transmitting said electrical signal, means electrically coupled to said capacitance means for shunting said electrical signal to substantially ground potential in response to being touched, and at least one means coupled to said capacitance means and responsive to said shunting means for implementing said electrical signal to control a function, the improvement wherein said implemental means comprises at least two multiple input inverting logic gates having matched threshold characteristics wherein one of said multiple input inverting logic gates is self-biased to establish a threshold bias voltage, and means for coupling said threshold bias voltage and said electrical signal transmitted by said capacitance means to the other said inverting logic gate for producing an output signal from said other logic gate which is responsive to the presence and absence of said electrical signal and thus responsive to said means for shunting being touched.

4,322,632
REMOTE LOAD SELECTOR

Edward F. Hart, Arlington, and Deane D. Fletcher, II, Plano, both of Tex., assignors to Teccor Electronics, Inc., Euless, Tex.

Filed Mar. 24, 1980, Ser. No. 133,350
Int. Cl.³ H02J *4/00*
U.S. Cl. 307—41 **5 Claims**



1. A remote load selector circuit for use with a system having a manually operable power switch coupled by an electrical transmission line to a plurality of remotely located loads, said selector circuit comprising:

a plurality of gate controllable switching devices, each of said plurality of switching devices having power terminals adapted for connection in series with a selected one of said remotely located loads and having a gate input for controlling conduction between said power terminals;

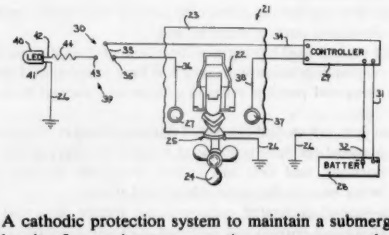
a plurality of bistable multivibrators, each of said multivibrators having at least one input for receiving a power transition signal and having at least one output coupled to the gate input of a selected one of said plurality of gate controllable switching devices; and,

transition detecting means adapted for connection to said transmission line for providing a power transition signal in response to the application or removal of power to or from the transmission line portion connecting said manually operable power switch to said plurality of remotely located loads in response to the closing or opening of said manually operable power switch, and said transition detecting means being coupled to at least one input of each multivibrator for changing the output state of at least one of said plurality of bistable multivibrators in response to the power transition signal.

4,322,633
MARINE CATHODIC PROTECTION SYSTEM

Richard E. Staerzl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jul. 19, 1979, Ser. No. 59,192
Int. Cl.³ H01B *7/28*
U.S. Cl. 307—95 **2 Claims**

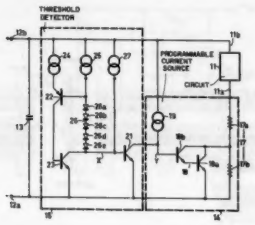


1. A cathodic protection system to maintain a submergible metal unit of a marine transportation system at a selected potential by selectively supplying electrical energy from a direct current source through a control circuit to a submergible anode located adjacent to the metal unit in response to sensed energy at a submergible reference electrode located adjacent and electrically isolated from the metal unit, wherein the improvement in said control circuit comprises means including a comparator with a first input connected to a highly regulated voltage source to establish a pre-set reference voltage and a second input providing a summing circuit connected to said highly regulated reference voltage source and to said reference electrode through an impedance-to-ground circuit to protect said reference electrode from excessive currents and to sum a reference voltage with a sensed isolated electrode potential signal to provide a controlled output in response to said sensed signal to selectively supply controlled amounts of direct current energy through a connecting circuit to said anode to maintain a pre-established voltage at said metal unit.

4,322,634
DEVICE FOR PROTECTION IN THE CASE OF D.C. SUPPLY-VOLTAGE DROP

Jean-Claude Kaire, Caen, and Jean-Claude G. Six, Versailles, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,668
Claims priority, application France, Dec. 29, 1978, 78 36827
Int. Cl.³ H02H *3/247*
U.S. Cl. 307—200 A **5 Claims**



1. A device for protection for a circuit in the case of a drop of the voltage of a d.c. power supply having a capacitor in parallel with its terminals, said device including first and second supply voltage inputs and two outputs between which a circuit to be powered may be included, said device comprising:

a programmable current source with two levels to energize said outputs;

a threshold-voltage detector in parallel with said inputs which, depending on the relative values of the input voltage and the threshold voltage detected by said detector selects a first level of the current from said programmable current source at high voltages and a second level at low voltages, said second current level being lower than said first level;

said programmable current source comprising:

a bridge of series resistors, a switch;

at least one of said resistors being connected in parallel with said switch whose change-over is controlled by said threshold detector, said switch being closed at high voltages and open at low voltages;

said detector specifically comprising:

a first and a second complementary transistor, the base of said first transistor being connected to the collector of said second transistor, the emitter of the first transistor being connected to a first input, and the emitter of the second transistor being connected to a second input via a current source, the collector of said first transistor influencing the base of a third transistor of the same type as the first transistor, whose emitter also constitutes the first input and whose collector constitutes the output of the detector;

a diode;

a current source;

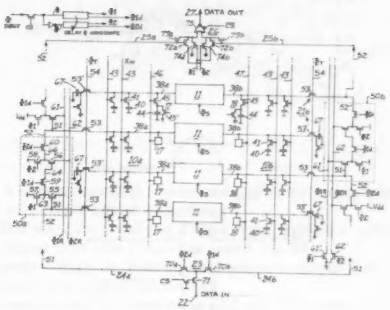
said collector of said first transistor being connected to a current source and, through at least one diode in the forward direction, to the base of said second transistor, which in its turn is connected to said current source.

4,322,635
HIGH SPEED SERIAL SHIFT REGISTER FOR MOS INTEGRATED CIRCUIT

Donald J. Redwine, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 23, 1979, Ser. No. 96,723
Int. Cl.³ G11C *19/28*
U.S. Cl. 307—221 C **6 Claims**

1. In a dynamic shift register having first and second driver transistors, first and second precharge transistors, and first and second transfer transistors in each stage, each such transistor having a source-drain path and a gate, the source-drain paths of the first driver and first precharge transistors being connected together at a first node and in series between first grounding means and a voltage supply, the source-drain paths of the second driver and second precharge transistors being connected together at a second node and in series between second grounding means and said voltage supply, the source-drain path of the first transfer transistor connecting said first node to the gate of the second driver transistor, the source-drain path of the second transfer transistor connecting said second node to an output node for the stage, the gate of the first driver transistor being an input node for the stage, and four different clock voltage sources connected separately to the gates of the first and second precharge transistors and the first and second



transfer transistors, the improvement wherein: the four clock voltage sources include a first clock having an on time during a first interval and connected to the gate of the first precharge transistor, a second clock having an on time during said first interval plus a succeeding second interval and connected to the gate of the first transfer transistor, a third clock having an on time during a third interval not overlapping the first or second intervals and delayed in time from the end of the second interval, the third clock being connected to the gate of the second precharge transistor, and a fourth clock having an on time during said third interval plus a succeeding fourth interval and connected to the gate of the second transfer transistor.

4,322,636
CIRCUIT SYSTEM FOR THE GENERATION OF A DIRECT CONTROL VOLTAGE DEPENDENT UPON AN ALTERNATING VOLTAGE

Ernst Schröder, Hanover, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 56,972
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830786
Int. Cl.³ H03K *17/296, 17/28, 4/06*
U.S. Cl. 307—246 **11 Claims**

1. A circuit for the generation of a direct control voltage dependent on an alternating voltage by means of a storage capacitor, particularly for the generation of a direct control voltage in a system for dynamic compression and expansion, comprising in combination:

a storage capacitor for providing the control voltage;

at least one electronically controllable charging circuit connected to said storage capacitor for charging same;

at least one electronically controllable discharging circuit connected to said storage capacitor for discharging same;

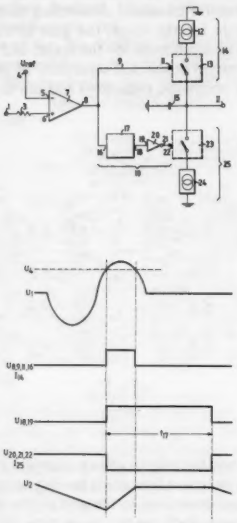
comparator means for comparing an alternating voltage input signal with a reference value and for producing an output signal corresponding to the results of the comparison;

a first control circuit path for connecting the output of said comparator means to the control input of said charging circuit;

a second control circuit path for connecting the output of said

comparator means to the control input of said discharging circuit;

a time delay circuit connected in one of said first and second control circuit paths, said time delay circuit including a



monostable trigger stage which responds to a change in its input potential; and

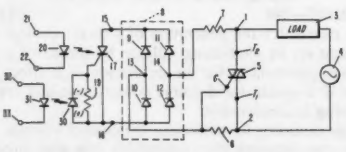
inverting means connected in one of said first and second control circuit paths for causing the output signals from said control paths to be inverted with respect to one another.

4,322,637

SOLID STATE SWITCH

Hiroaki Takasago, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 17, 1980, Ser. No. 130,596
Claims priority, application Japan, Apr. 4, 1979, 54-39751
Int. Cl.³ H03K *17/72*
U.S. Cl. 307—252 A **12 Claims**



1. A solid state switch comprising:

a photo-thyristor having anode, cathode, and gate electrodes;

first light emitting means for activating said photo-thyristor;

biasing means for keeping said gate electrode of said photo-thyristor in a backwardly biased state with respect to said cathode electrode when activated by light; and

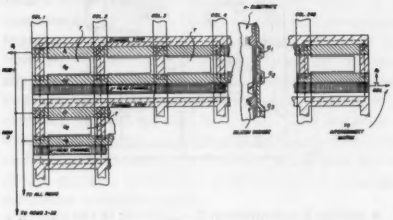
second light emitting means for activating said biasing means.

4,322,638

IMAGE SENSOR ADAPTABLE FOR FAST FRAME READOUT

Teh-Hsuang Lee, Webster, and Rajinder P. Khosla, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 16, 1980, Ser. No. 112,482
Int. Cl.³ H03K *3/42;* G11C *19/28;* H01L *29/78, 27/14*
U.S. Cl. 307—311 **12 Claims**



1. Area image sensor apparatus comprising:

(a) an insulated substrate comprised of semiconductor material of one conductivity type and an overlying layer of electrical insulating material;

(b) a plurality of electrically conductive, spaced enable gate structures extending a given length across said insulated substrate;

(c) a plurality of electrically conductive isolating gate structures extending a given length across said insulated substrate and being so disposed that a respective isolating gate structure lies between adjacent enable gate structures;

(d) a plurality of electrically conductive spaced address gate structures extending across said enable and isolating gate structures to form a plurality of photosites at least one of said pluralities of enable and address gate structures being transmissive to incident radiation;

(e) a plurality of read channels comprising a semiconductor type opposite that of said substrate material, each of said read channels being disposed between alternate pairs of adjacent enable and isolating gate structures;

(f) means for applying a first potential to said enable gate structures to form a plurality of first potential wells in said substrate for the collection of charges integrated in response to incident radiation;

(g) means for applying a second potential to said address gate structures to form a plurality of second potential wells in said substrate;

(h) means for applying a third potential to said isolating gate structures to form a plurality of third potential wells in said substrate;

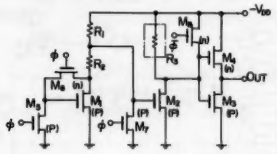
(i) means for applying an enablement signal to at least one of said enable gate structures to transfer charges collected in corresponding first potential wells to corresponding second potential wells; and

(j) means for applying an address signal to at least one of said address gate structures to transfer charges from a corresponding second potential well, through a corresponding one of said third potential wells, and into a corresponding read channel, whereby for each photosite, charge integrated in said substrate material in response to incident radiation passing through said enable gate structure is transferred to said read channel by the application of respective signals to said enable and address gate structures.

4,322,639
VOLTAGE DETECTION CIRCUIT

Osamu Yamashiro, Ohmiya, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 718,009, Aug. 26, 1976, abandoned.
This application Mar. 14, 1978, Ser. No. 886,425
Int. Cl.³ H03K 5/153
U.S. Cl. 307—350 13 Claims



1. A voltage detection circuit comprising:

a logic circuit including a first MISFET of a first conductivity type and a second MISFET of a second conductivity type being opposite to said first conductivity type, wherein the gate electrodes of said first and said second MISFETs are commonly connected, the drain electrodes of said first and said second MISFETs are commonly connected to a detection output electrode, and the source electrodes of said first and said second MISFETs are respectively connected to first and second prescribed potentials;

a voltage dividing circuit for applying a divided voltage of a potential difference between said first and said second prescribed potentials to said gate electrodes of said first and said second MISFETs in said logic circuit, including a third MISFET of said second conductivity type and a load resistive element, wherein the source electrode of said third MISFET is connected to said second prescribed potential and the drain electrode of said third MISFET is connected to said first prescribed potential through said load resistive element and is coupled with said gate electrodes of said first and said second MISFETs; and

a bias circuit for applying a bias voltage to the gate electrode of said third MISFET, including first and second linear resistors connected in series between said first and said second prescribed potentials, wherein the juncture of said first and said second linear resistors is connected to the gate electrode of said third MISFET, thus compensating for temperature variations in threshold voltages of said first, second, and third MISFETs, wherein

said bias circuit controllably supplies the bias voltage at said juncture to said gate electrode of said third MISFET in response to clock control means connected between said gate electrode of said third MISFET and said second prescribed potential terminal; and

wherein

$$\sqrt{\frac{\beta_1 W_1/L_1}{\beta_2 W_2/L_2}} << 1$$

where

β_1 is the channel conductance of said first MISFET,

W_1 is the channel width of said first MISFET,

L_1 is the channel length of said first MISFET,

β_2 is the channel conductance of said second MISFET,

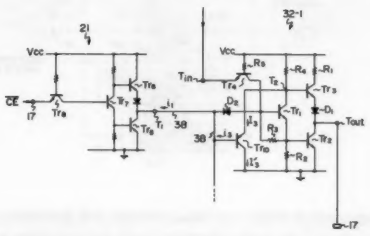
W_2 is the channel width of said second MISFET, and

L_2 is the channel length of said second MISFET.

4,322,640
THREE-STATE OUTPUT CIRCUIT

Toshitaka Fukushima, and Kouji Ueno, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 16, 1979, Ser. No. 95,073
Claims priority, application Japan, Nov. 25, 1978, 53-145831
Int. Cl.³ H03K 19/20
U.S. Cl. 307—473 8 Claims



1. A system including at least one three-state output circuit, each said output circuit comprising

a first stage for receiving a logic input signal for selective output from said three-state output circuit,

a control stage for enabling said selective output from said three-state output circuit, and

an output stage for outputting said selective output, and

each said output stage comprising

a phase-splitter transistor which is controlled by the input logic signal, and

a pull-up transistor and a pull-down transistor connected serially between a power supply line and a ground line of said three-state output circuit, the pull-up and pull-down transistors being made conductive or non-conductive alternately by the phase-splitter transistor to selectively produce a high and a low level signal corresponding to said input signal at a node between the pull-up and pull-down transistors, said signal at said node corresponding to said output signal,

each said control stage comprising a control circuit which operates responsive to an enable signal to make said transistors of said output stage selectively active and non-active, in which non-active condition a high output impedance is provided at said node and in which active condition said output signal corresponds to said input signal;

said output stage comprising a first PNP transistor connected at its emitter to both the base of the pull-up transistor and the collector of the phase-splitter transistor, the base of said PNP transistor being connected to the control circuit and the collector thereof being connected to the ground line, and

said control circuit comprising enable means for selectively absorbing the base current from said first PNP transistor of said output stage, so as to correspondingly create said high impedance output at said node.

4,322,641
NOISE REDUCTION SYSTEM

Thomas N. Packard, Syracuse, N.Y., assignor to Packburn Electronics, Syracuse, N.Y.

Filed Dec. 11, 1979, Ser. No. 102,409
Int. Cl.³ H03H 7/12
U.S. Cl. 307—521 15 Claims

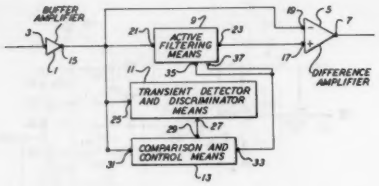
1. A system for suppressing noise in a total input signal in electrical form, comprising:

first means for producing a first signal proportional to the peak amplitude of the rate of change with respect to time of the total input signal;

second means for producing a second signal proportional to the instantaneous amplitude of the total input signal;

selection means for selecting an operating frequency band for use with the second means, the second means producing the second signal proportional to the instantaneous amplitude of the portion of the total input signal falling within the selected frequency band;

control and comparison means for comparing the first and second signals to obtain an indication of the noise in the total



input signal relative to the amplitude and frequency characteristics of the total input signal, and for generating a control signal according to said indication; and

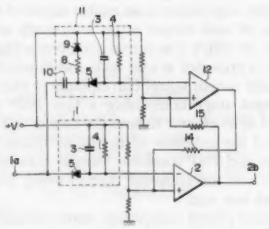
active filtering means having a cut-off frequency selected in response to said control signal, said active filtering means filtering from the total input signal components of the total input signal according to the selected cut-off frequency to suppress noise in the total input signal.

4,322,642

FREQUENCY DISCRIMINATING CIRCUIT

Fu[illegible]shi Sugasawa, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Feb. 11, 1980, Ser. No. 120,097
Claims priority, application Japan, Feb. 16, 1979, 54-15996
Int. Cl.[3] H03K *9/06*
U.S. Cl. 307—522 **11 Claims**



1. A frequency discriminating circuit comprising:

a first signal generating means responsive to an input pulse signal and outputting a first signal of which the peak values vary in response to the frequency of the input signal and the trough values are substantially constant;

a second signal generating means responsive to the input pulse signal and outputting a second signal of which the trough values vary in response to the frequency of the input signal; and

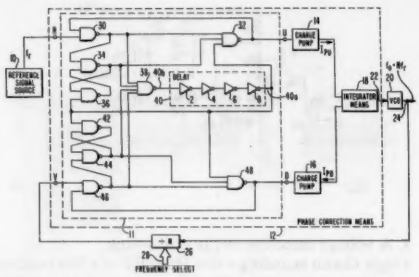
a discriminating means responsive to the first and second signals and determining a frequency decrease in the input signal past a predetermined frequency by sensing a peak in the first signal above a first level and determining a frequency increase in the input signal past the predetermined frequency by sensing a trough in the second signal below a second level.

4,322,643

DIGITAL PHASE COMPARATOR WITH IMPROVED SENSITIVITY FOR SMALL PHASE DIFFERENCES

Donald R. Preslar, Plainfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,053
Int. Cl.[3] H03D *13/00*
U.S. Cl. 307—528 **9 Claims**



1. In a digital phase comparator apparatus for comparing the phase of a first input signal to the phase of a second input signal, and providing an output control signal at an output circuit node corresponding to the relative phase difference between said first and second input signals, said phase comparator apparatus including first, second, third and fourth flip-flops each having respective input terminals for setting and resetting thereof, and each flip-flop having a respective output terminal for indicating its state, means connecting said first, second, third and fourth flip-flops as a digital phase comparator, that means including means responsive to said first input signal for setting said first flip-flop, means responsive to the reset state of said first flip-flop for setting said second flip-flop, means responsive to the reset state of said second flip-flop for resetting said first flip-flop, means responsive to said second input signal for setting said third flip-flop, means responsive to the reset state of said third flip-flop for setting said fourth flip-flop, means responsive to the reset state of said fourth flip-flop for resetting said third flip-flop, means responsive to the state of said first flip-flop for providing a first digital output pulse, means responsive to the state of said third flip-flop for providing a second digital output pulse, and logic means responsive to the respective set states of said first, second, third and fourth flip-flops, for resetting said first, second, third and fourth flip-flops, said phase comparator apparatus further including a first switched current source responsive to said first digital output pulse for sourcing a predetermined current to said output circuit node, and a second switched current source responsive to said second digital output pulse for sinking current substantially equal to said predetermined current from said output circuit node, wherein for small phase differences between said first and second input signals said respective first and second digital output pulses have a time duration less than the minimum time required to turn on said first and second switched current sources respectively, thereby causing said phase comparator apparatus to exhibit a dead zone for sufficiently small phase differences between said first and second input signals in the region between phase lead and phase lag conditions, the improvement comprising:

delay means responsive to the set state of said first, second, third and fourth flip-flops for substantially increasing the time required for said logic means to reset said first, second, third and fourth flip-flops, thereby increasing the minimum time duration of said first and second digital output pulses.

4,322,644
CIRCUIT ARRANGEMENT FOR CONTROLLING THE OPERATING FUNCTIONS OF A BROADCAST RECEIVER

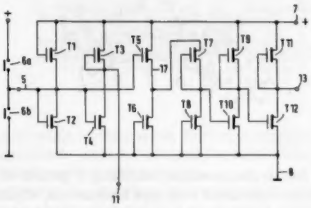
Friedrich Bott, Prinz-Ludwig-Strasse 21, 8050 Freising, and Lembit Soobik, Sonnenstrasse 10, 8051 Kranzberg, both of Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 962,419

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753863

Int. Cl.³ H03K *5/153, 17/687*

U.S. Cl. 307—571 **4 Claims**



1. A circuit arrangement for controlling the operating functions of a device, in which an up/down counter is associated with each operating function, of which the particular count corresponds to a certain setting of the operating function and which comprises an up-counting input and a down-counting input and, in dependence upon function control signals at these inputs, counts pulses supplied by a clock-pulse generator, wherein two threshold-value circuits each having an input, an output and different threshold values are provided for each operating function, said threshold-value circuit inputs being coupled together and said threshold-value circuit outputs being connected to the up-counting input and to the down-counting input, respectively, of the associated up-down counter, and wherein in dependence upon the value of a voltage delivered to their interconnected inputs, each of said threshold-value circuits furnishes a function control signal having one or the other binary signal value, and wherein further the interconnected inputs of the threshold-value circuits are connected to switch means which permit one of several voltage values to be applied thereto in accordance with a required setting of the operating function, whereby only a single conductor from said switch means to said threshold-value circuits is required to control each of said operating functions.

4,322,645
LIQUID-COOLED ELECTRIC MACHINE

Franz Spirk, and Detlef Vandamme, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

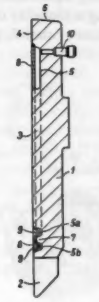
Filed Mar. 24, 1980, Ser. No. 132,768

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 2913972

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—58 **11 Claims**

1. In a liquid-cooled electric machine including a pressure plate of non-magnetic steel which presses the stator lamination stack together, the pressure plate having pressure fingers and including cooling canals for cooling liquid to flow through the pressure plate, the improvement comprising a recess in the pressure plate which extends adjacent to the pressure fingers and a cover plate secured to the pressure plate closing off the recess, said cover plate being provided with a rib on the surface thereof facing said recess, said recess and said cover plate forming a cooling canal on the pressure plate.



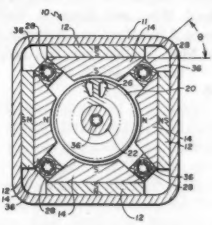
4,322,646
FLUX FOCUSSED DC MOTOR AND METHOD FOR ASSEMBLY

Erland K. Persson, Minneapolis, Minn., assignor to Electro-Craft Corporation, Hopkins, Minn.

Filed Feb. 29, 1980, Ser. No. 126,028

Int. Cl.³ H02K *5/18*

U.S. Cl. 310—64 **6 Claims**



1. In an electric motor comprising a housing, an armature mounted for rotational movement in said housing, a plurality of bar magnets mounted on inner surfaces of said housing, a plurality of magnetically permeable pole pieces attached to said magnet portions to focus flux from said magnets on said armature, the improvement comprising:

a plurality of wedge-shaped non-ferrous spacers mounted between each of said bar magnets and pole pieces, said spacers constructed and arranged to maintain said magnets and pole pieces in the proper alignment, at least one of said spacers including heat extraction means.

4,322,647
MOTOR ASSEMBLY

Thomas H. Neroda, Watertown; George A. Flaherty, Adams Center, and David L. Evans, Rodman, all of N.Y., assignors to The Scott & Fetzer Company, Watertown, N.Y.

Filed Nov. 23, 1979, Ser. No. 96,783

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—71 **18 Claims**

1. An electric motor assembly comprising a stator core and an armature supported in the stator core, said stator core having axially spaced, annular end faces and field coils of magnet wire wound on opposite sides of the core, said field coils including looped portions extending axially from and circumferentially across one of said end faces, a terminal harness formed

of electrically insulating resilient material, a set of solderless electrical terminals carried on said harness, ends of the magnet wire of the field coils being connected directly to said terminals, said harness including a plurality of hooks adapted to lock around said looped portions of said field coils to provisionally

hold said harness on said stator core, said harness being constructed and arranged to permit it to elastically deform from a free state to allow said hooks to snap around said looped portions of said field coils after said field coils are wound on said stator core and then relax into a condition wherein said hooks maintain said harness on said stator core.

4,322,648

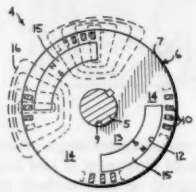
PERMANENT MAGNET MOTOR ARMATURE

Glen Ray, Big Bend, Wis., and James B. Gollhardt, Shawnee, Okla., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Mar. 3, 1980, Ser. No. 126,885

Int. Cl.³ H02K *21/12*

U.S. Cl. 310—156 **5 Claims**



1. In an electric motor armature the combination comprising:

a magnetic core having a central axis and a peripheral air gap surface, said core including:

a number of circularly and radially extending permanent magnets disposed in the core that each have a magnetic pole of one polarity across its radially outer face and a magnetic pole of opposite polarity across its radially inner face, the radially outer face of each magnet being substantially concentric with said magnetic core;

each permanent magnet being enveloped by magnetic material of the core around its circularly spaced ends and along its radially inner face, the arcuate extent of the magnet being from 150 to 220 electrical degrees, and the magnetic material of the core located between the ends of said magnets extending for substantially the remainder of the circular extent of the core; and

all said magnets having the same polarity at their radially outer faces and the opposite polarity at their radially inner faces, with a consequent substantially magnetic neutral condition at the armature axis.

4,322,649

STATOR FOR AN ELECTROMOTOR

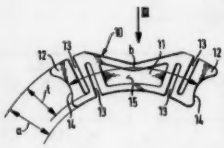
Lutz Troeder, Unterpfaffenhofen, and Franz Hoyss, Bad Tölz, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Jan. 9, 1980, Ser. No. 110,632

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1979, 2901321

Int. Cl.³ H02K *3/00*

U.S. Cl. 310—194 **10 Claims**



1. Stator for an electromotor including a packet of laminations, field coils associated with said laminations, adjacent ends of said field coils being spaced apart and forming an open space therebetween, a ring-segment shaped filler piece located in the open space and extending between the adjacent ends of said field coils for filling the open space and retaining said field coils in position, wherein the improvement comprises that said filler piece is resilient in the direction between the adjacent ends of said field coils so that said filler piece can adapt to variations in the dimension between the adjacent ends.

4,322,650

SMALL ELECTRIC MOTOR

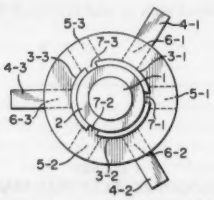
Takaichi Mabuchi, Matsudo, Japan, assignor to Mabuchi Motor Co. Ltd., Tokyo, Japan

Filed Nov. 28, 1979, Ser. No. 98,372

Claims priority, application Japan, Jun. 12, 1978, 53-70491

Int. Cl.³ H02K *13/06*

U.S. Cl. 310—220 **4 Claims**

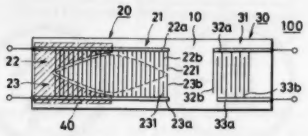


1. A small electric motor having a plurality of commutator segments disposed at equal spacings in the angular positional direction on an insulating cylinder fixedly fitted to a rotary shaft of a motor rotor, and brushes for making sliding contact with the commutator segments, wherein reservoirs for holding an electrically conductive mixture prepared by mixing electrically conductive fine particles with oily substance are provided by boring the insulating cylinder in such a manner that each reservoir extends to the adjoining commutator segments, and the electrically conductive mixture is injected into the reservoirs so that the mixture is deposited bridging each of the commutator segments.

4,322,651
ACOUSTIC SURFACE WAVE DEVICE

Atsushi Inoue; Hiromichi Yamada, and Kenji Suzuki, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Apr. 27, 1978, Ser. No. 900,742
Claims priority, application Japan, May 9, 1977, 52-53613; May 20, 1977, 52-59011
Int. Cl.[3] H01L *41/08*
U.S. Cl. 310—313 B 13 Claims

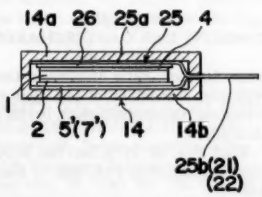


1. An acoustic surface wave device, comprising:
a piezoelectric material adapted for supporting propagating acoustic surface wave energy;
at least one electromechanical transducer means for converting an electrical signal into an acoustic surface wave and vice versa, coupled to a surface of said piezoelectric substrate at a transducer region thereof, said transducer means comprising an interdigital electrode assembly including first and second common electrodes and first and second groups of electrode fingers commonly connected respectively to said common electrodes at one end thereof and extending toward the other said common electrode to terminate in a free end;
said electrode fingers of said first and second groups having respectively overlapping lengths which vary to form an envelope of a desired shape defined by said free ends of said electrode fingers; and
an acoustic surface wave absorbing material provided on said piezoelectric material in an area including a portion of said transducer region where an undesired acoustic surface wave is propogated, edge portions of said acoustic surface wave absorbing material adjacent said envelope being conformally configured therewith.

4,322,652
PIEZOELECTRIC RESONATOR SUPPORT WITH DIRECTION-ORIENTED CONDUCTIVE PLASTIC PLATE

Eizo Otsuka, Yokohama, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed May 23, 1979, Ser. No. 41,899
Claims priority, application Japan, Aug. 12, 1978, 53-98590
Int. Cl.[3] H01L *41/08*
U.S. Cl. 310—345 8 Claims

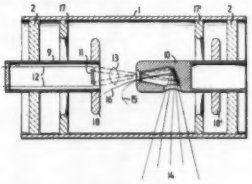


1. A piezoelectric filter comprising:
a casing;
a piezoelectric substrate accommodated in said casing and having first and second opposing major surfaces, said piezoelectric substrate further having a first and a second electrode layer formed on said first surface and electrically insulated from each other, and said substrate further having a common electrode layer formed on said second surface;
a first flat terminal means disposed between said first surface of said piezoelectric substrate and one portion of said casing, said first terminal means having one end extending outside said casing and the other end in electrical contact with said first electrode layer;
a second flat terminal means disposed between said first surface of the piezoelectric substrate and said one wall portion of said casing, said second terminal means having one end extending outside said casing and the other end in electrical contact with said second electrode layer;
a common terminal means disposed between said second surface of said piezoelectric substrate and a second wall portion of said casing, said common terminal means having one end extending outside said casing and the other end in electrical contact with said common electrode layer; and
a unitary direction-oriented electroconductive plastic sheet disposed on and in electrical contact with said first and second electrode layers and between said electrode layers and said first and second terminal means, said direction-oriented electroconductive plastic sheet having, when said filter is in operation, substantial electroconductivity only in the direction perpendicular to said first major surface, and said first and second terminal means being in electrical contact with said first and second electrode layers, respectively, through different, non-overlapping portions of said direction-oriented electroconductive plastic sheet, said unitary direction-oriented electroconductive plastic sheet being situated between said first and second electrode layers and said first and second terminal means such that said first and second terminal means are in contact with a substantial portion of the surface of said first and second electrode layers, respectively.

4,322,653
APPARATUS INCLUDING AN X-RAY TUBE WITH SHIELDING ELECTRODES

Dietrich Bader, and Sieghard Reiprich, both of Berlin, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 2, 1979, Ser. No. 81,262
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855905
Int. Cl.[3] H01J *35/04, 35/16*
U.S. Cl. 313—55 5 Claims



1. X-ray apparatus comprising
a metal cylindrical wall member having a longitudinal axis and opposite first and second open ends;
a pair of end members positioned within the open ends of said wall member, at least one of said end members being an annular ceramic member having a central aperture therein and being sealed at its outer periphery to said wall member;
anode and cathode elements located within said wall member, said anode and cathode elements being located respectively at the first and second ends of said wall member and being shaped such that they shield said annular ceramic member thereby preventing impingement of charged particles thereon;

a pair of high voltage leads connected to said anode and cathode elements respectively, at least one of said high voltage leads passing through the aperture in said ceramic member in a vacuum-tight manner to form a vacuum-tight envelope comprising said wall and end members;

at least one connecting member releasably attached to an end of said wall member adjacent said annular ceramic member for providing an axial releasable electrical connection with said at least one high voltage lead, the outer face of said annular ceramic member being rotationally symmetrical with respect to the longitudinal axis of said wall member and forming an angle not greater than 45° with a plane perpendicular to said longitudinal axis; and

first and second axially spaced conductive shielding electrodes surrounding at least one of said anode and cathode elements and being rotationally symmetrical with respect to the longitudinal axis of said wall member, said first electrode having a greater outer diameter than said second electrode and being electrically connected to said wall member, said second electrode being electrically connected to the element surrounded by said electrodes, said first electrode having an inner diameter which is less than the outer diameter of said second electrode, and said second electrode being closer to the first end of said wall member than said first electrode.

4,322,654

HIGH-PRESSURE SODIUM VAPOR DISCHARGE LAMP

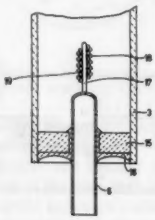
Peter A. W. Tielemans, and Cornelis A. J. Jacobs, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 17, 1979, Ser. No. 75,777

Claims priority, application Netherlands, Oct. 6, 1978, 7810088

Int. Cl.³ H01J *61/073, 61/22*

U.S. Cl. 313—218 **1 Claim**



1. A high-pressure sodium vapor discharge lamp having a hermetically sealed ceramic discharge vessel containing a gas filling comprising sodium, mercury and a rare gas, and lead-through conductors which extend through the wall of the discharge vessel to respective electrodes disposed in the discharge vessel, which electrodes are wound at their free ends with tungsten wires, the cavities formed between the tungsten wire being filled with electron-emitting material consists of oxygen-bound alkaline earth metal and oxygen-bound tungsten, characterized in that the electron-emitting material consists of oxygen-bound strontium and oxygen-bound tungsten in a molar ratio which is between 3:1 and 50:1.

4,322,655

BEAM INDEX COLOR CATHODE RAY TUBE

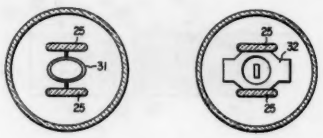
Shigeo Takenaka, Fukaya, and Eizaburo Hamano, Kumagaya, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 973,125, Dec. 26, 1978, abandoned. This application Jan. 5, 1981, Ser. No. 222,325

Claims priority, application Japan, Dec. 28, 1977, 52-157284

Int. Cl.³ H01J *29/56, 29/34, 29/46*

U.S. Cl. 313—471 **4 Claims**



1. A beam index color cathode ray tube comprising:

an envelope which includes a face plate portion, a neck portion, and a conical portion provided between the face plate portion and the neck portion;

a screen provided on the inner surface of the face plate portion, said screen including an array of light-emitting phosphor stripes each of which is arranged in a first direction and extends in a second direction intersecting said first direction at a right angle, and a plurality of radiation-emissive indexing stripes arranged and extending parallel to the phosphor stripes;

an electron gun which includes a triode portion comprising at least a cathode and a first grid electrode, and a main lens portion consisting of second, third and fourth grid electrodes which form a main focus lens therebetween;

said first grid electrode, which is provided near the cathode electrode, has an elongated opening having major and minor axes which are parallel to said second direction and parallel to said first direction respectively, so that the cross-sectional shape of the electron beam emitted from said triode portion is formed to be an elongated shape having major and minor axes which are parallel to said second direction and parallel to said first direction respectively;

said second, third and fourth electrodes, each of which has an elongated opening having major and minor axes which are parallel to said first direction and parallel to said second direction respectively, form the main lens without spherical aberration in said first direction so that focusing of the electron beam in said first direction is stronger than in said second direction; and

wherein the width of the electron beam on the screen is less than the width of each phosphor stripe through the entire screen.

4,322,656

SPACER MOUNT IN A GAS-DISCHARGE DISPLAY DEVICE

Wilhelm Huber, Goldach; Peter Mammach, Unterhaching, and Kaspar Weingand, Gmund, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 23, 1979, Ser. No. 96,920

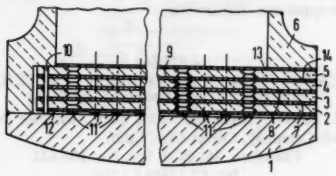
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2855108

Int. Cl.³ H01J *19/42*

U.S. Cl. 313—485 **6 Claims**

1. A spacer mount for a gas-discharge display device in which glass elements are arranged between a control hole plate and having a plurality of holes therethrough, and an anode spaced from said control hole plate to define an acceleration space therebetween, and a fluorescent screen which carries image points adjacent the anode, comprising:

a plurality of glass layers stacked atop one another between the control hole plate and the anode and fluorescent screen, said glass layers each including holes therethrough aligned with the holes of the control hole plate and the image points on the fluorescent screen; and



a metal layer between at least two of said glass layers including holes aligned with the above-mentioned holes in the control hole plate and said glass layers for connection to a potential to homogenize the potential drop in the acceleration space.

4,322,657

GAS-DISCHARGE DISPLAY DEVICE

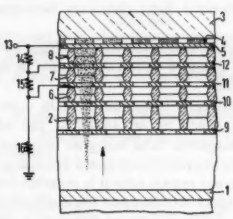
Werner Veith, Heidelberg, and Karl-Heinz Walter, Grafing, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 28, 1979, Ser. No. 98,125

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2855056

Int. Cl.³ H04N *3/16*

U.S. Cl. 313—485 **13 Claims**



1. In a gas-discharge display device of the type having an electron emitter, a matrix control hole grid disc with intersecting row and column conductors on opposite sides of a control hole plate, a fluorescent screen with an anode adjacent thereto, and an acceleration space between the matrix control hole grid disc and the anode, the improvement therein comprising:

at least one grid electrode in the acceleration space parallel to the matrix control hole grid disc for receiving a grid potential to determine the electron course between the disc and the anode, said grid electrode having a hole grid aligned with the hole grid of the disc.

4,322,658

HIGH INTENSITY DISCHARGE LAMP CONTAINING ELECTRONIC STARTING AID

Michael M. Minarczyk, North Royalton, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 19, 1980, Ser. No. 131,608

Int. Cl.³ H01J *7/44, 17/34, 19/78;* **H01K** *1/62*

U.S. Cl. 315—47 **3 Claims**

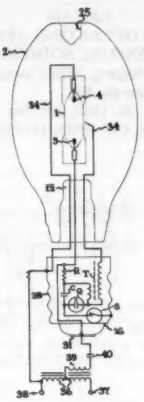
1. A dual envelope high intensity discharge lamp comprising:

an outer vitreous jacket enclosing an inner arc tube having an electrode sealed into each end and containing an arc sustaining filling,

a base fastened to an end of said jacket comprising a metal shell and an insulated end contact together with conductors extending from shell and end contact into said jacket to the electrodes of said arc tube,

an electronic pulsing circuit in said base comprising a resistor and a capacitor serially connected between shell and end contact, a pulse transformer having a primary and a step-up secondary, and a voltage sensitive switch device,

said transformer having its primary connected in series with the switch device across said capacitor, one side of the secondary being connected to a common point and the



other being capacitively coupled to said arc tube, and said switch device having a breakdown voltage less than that to which said capacitor charges prior to ignition of the arc tube whereby said circuit produces high voltage pulses until the lamp starts,

and a thermal switch in said base connected in series with said resistor and capacitor between shell and end contact, said switch opening when said base attains normal operating temperature whereby to remove voltage from said capacitor and extend its life.

4,322,659

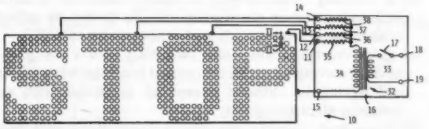
GAS-DISCHARGE DEVICES AND DISPLAY PANELS

Michael De Jule, Chicago; Alan Sobel, Evanston; Ralph L. Meyer, Elgin, all of Ill., and David Glaser, Wilton Manor, Fla., assignors to Lucitron, Inc., Northbrook, Ill.

Filed Oct. 10, 1979, Ser. No. 83,379

Int. Cl.³ H05B *37/00;* **H01J** *17/00*

U.S. Cl. 315—169.1 **18 Claims**



1. A gas-discharge device comprising: envelope means defining an enclosed space containing an ionizable gas, first and second electrode means within said envelope means, discharge-path means defining a gas-discharge path between a surface portion of said first electrode means and a surface portion of said second electrode means, said discharge-path means including charge-collecting means controlling field conditions along said path as a function of time for controlling the breakdown voltage and hence the time of production of a gas-discharge in said path, said discharge-path means defining

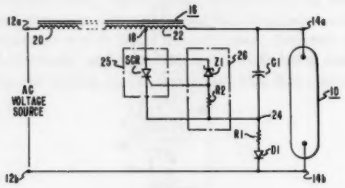
a plurality of additional gas-discharge paths between surface portions of said first electrode means and surface portions of said second electrode means, and said discharge-path means including charge-collecting means controlling field conditions along said additional gas-discharge paths as a function of time for controlling the breakdown voltages and hence the time of production of gas discharges in said additional paths, said discharge-path means comprising at least one layer of a fabric material between said first and second electrode means having openings therethrough which provide said discharge paths.

4,322,660

STARTING AND OPERATING APPARATUS FOR HIGH-PRESSURE SODIUM LAMPS

James C. Johnson, Vicksburg, Miss., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 20, 1980, Ser. No. 161,541
Int. Cl.³ H05B *41/231*
U.S. Cl. 315—289 **1 Claim**



1. A starting and operating apparatus for connection across an AC source for starting and then operating a high-pressure sodium discharge lamp, said apparatus comprising:

(a) input terminals operable to be connected across said AC source, output terminals operable to have said discharge lamp connected thereacross, a ballast inductor having a tap intermediate the ends thereof to define first and second winding portions, said first winding portion having a greater length than said second winding portion and having a transformation ratio therebetween substantially greater than unity, said ballast inductor connected at its ends in series between one of said input terminals and one of said output terminals with said second winding portion connected to said one output terminal, and the other of said input terminals electrically connected to the other of said output terminals;

(b) a capacitor connected in circuit between a common electrical point and said one output terminal so as to be across said second winding portion of said ballast inductor;

(c) a charging resistor connected in circuit between said common electrical point and said other output terminal;

(d) a blocking diode having its anode connected in circuit with said common electrical point and having its cathode connected in circuit with said other output terminal;

(e) gate-controlled solid-state switching means comprising an SCR having its anode connected in circuit with said tap and having its cathode connected in circuit with said common electrical point;

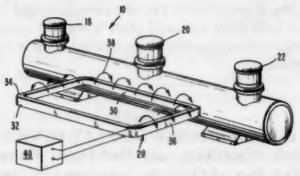
(f) Zener diode means comprising a Zener diode, said Zener diode having its cathode connected in circuit with said tap and having its anode connected in circuit with the gate of said SCR, said Zener diode having a predetermined Zener voltage which is greater than the rms voltage for said source but less than the peak voltage of said source, said Zener diodes means further comprising a bleeder resistor connected in circuit between said common electrical point and said gate of said SCR, whereby when said apparatus is initially energized, said capacitor is charged through said charging resistor, upon said capacitor voltage exceeding said predetermined Zener voltage of said Zener diode, said SCR is gated thereby causing said capacitor to discharge through said second winding portion to cause the autotransformer action thereof to apply a voltage pulse of sufficient magnitude across said output terminals to start said lamp connected thereacross, and after said lamp is started, the Zener voltage of said Zener diode is not exceeded, thereby rendering the lamp starting portion of said apparatus inoperative.

4,322,661

CROSS-FIELD PLASMA MODE ELECTRIC CONDUCTION CONTROL DEVICE

Robin J. Harvey, Thousand Oaks, Calif., assignor to Huges Aircraft Company, Culver City, Calif.

Filed Dec. 26, 1979, Ser. No. 106,622
Int. Cl.³ H01J *1/50*
U.S. Cl. 315—344 **7 Claims**



1. A crossed-field electric conduction control device comprising:

first and second spaced electrodes having an interelectrode space therebetween and a means for applying an electric potential between said first and second electrodes for defining an electric field direction between said electrodes;

means for enclosing said interelectrode space for maintaining a selected gas at a selected pressure in the interelectrode space; and

means for providing a magnetic field in a region of the interelectrode space at an angle to the electric field therein, said magnetic field being an open path magnetic field within the interelectrode space extending from a first region to a second region which is separate from said first region in said space so that upon the application of electric and magnetic fields, electrons flow on a discontinuous path in the interelectrode space which extends from said first region to said second region and not back to said first region to produce a plasma discharge between the said first region and said second region whereby electric conduction takes place and the plasma density is controlled by regeneration of electrons adjacent said first region, which electrons pass through said interelectrode space causing cascading ionization and the electrons are captured by said second electrode adjacent the second region.

4,322,662

APPARATUS FOR CONTROLLING THE ELECTRON BEAM IN AN IMAGE PICK-UP TUBE

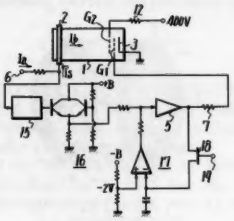
Takashi Nakamura, and Yoshio Chiba, both of Atsugi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 11, 1980, Ser. No. 111,189
Claims priority, application Japan, Jan. 17, 1979, 54-4297
Int. Cl.³ H01J *29/52*
U.S. Cl. 315—383 **10 Claims**

1. Apparatus for controlling the electron beam in an image pick-up tube of the type having a cathode electrode for emitting a scanning electron beam, a control electrode for regulating the current of said beam at said cathode electrode and through which there is a control electrode current flow during operation of the tube, and a target electrode from which a video output signal is obtained in correspondence to incident light from an object image projected on said target electrode as

the latter is scanned by said electron beam, said apparatus comprising:

means for generating a beam control signal in response to said video output signal;



means for supplying said beam control signal to said control electrode for regulating the current of said beam at said cathode electrode; and

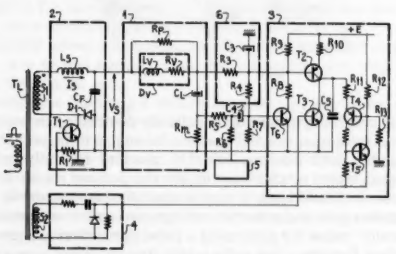
means for compensating said beam control signal for varying levels of said incident light in response to said control electrode current.

4,322,663

SWITCHED-MODE FIELD-SCANNING CIRCUIT OF VIDEO-FREQUENCY RECEIVER

Gerard Rilly, Paris, France, assignor to Thomson-Brandt, Paris, France

Filed Jul. 20, 1979, Ser. No. 58,982
Int. Cl.³ H01J *29/70, 29/76*
U.S. Cl. 315—408 **7 Claims**



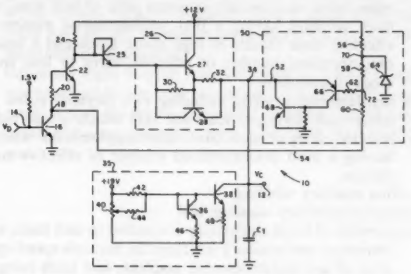
1. A switched-mode field-scanning circuit wherein the input energy is delivered by a secondary winding of the line transformer of a television receiver providing line-scanning retrace signals, and this energy is provided to a circuit for generating the sawtooth signal at the field frequency which comprises a single active bidirectional current and unidirectional-voltage switch, the conduction of which is controlled by a control circuit in order to vary from line to line at each line-scanning period, the sawtooth signal generated by said circuit being delivered to the vertical deflector which is connected in series with a connecting capacitor having a sufficiently high capacity to ensure that the terminal voltage of an assembly thus formed retains the same polarity irrespective of the direction of the current flowing through said vertical deflector.

4,322,664

VERTICAL RAMP GENERATOR FOR A TELEVISION RECEIVER

Stan Bart, Hoffman Estates, and George J. Tzakis, Glenview, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Sep. 8, 1980, Ser. No. 184,718
Int. Cl.³ H01J *29/70, 29/76*
U.S. Cl. 315—408 **8 Claims**



1. In a television receiver having means for generating a vertical rate pulse, and having a ramp generator responsive to the vertical rate pulse for generating a ramp voltage for use in developing a vertical deflection signal, an improved ramp generator comprising:

means responsive to the vertical rate pulse for generating a charging current for the duration of the vertical rate pulse;

means for generating a discharging current whose value is less than the value of the charging current;

a capacitor receiving the charging and discharging current for developing a ramp voltage; and

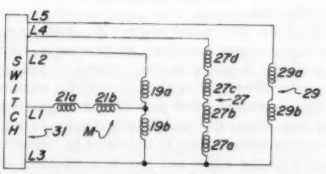
a clamp circuit coupled to said capacitor and enabled on the occurrence of the vertical rate pulse for clamping the ramp voltage on the capacitor to a predetermined peak voltage via a low impedance path such that unwanted voltage components are substantially eliminated from the ramp voltage during the clamping action, and responsive to the termination of the vertical rate pulse for quickly releasing the clamp so that the ramp voltage decreases substantially linearly in response to the discharging current.

4,322,665

TWO SPEED SINGLE PHASE MOTOR

Robert A. Landgraf, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 9, 1979, Ser. No. 56,024
Int. Cl.³ H02K *17/08*
U.S. Cl. 318—774 **2 Claims**



1. A multiple speed dynamoelectric machine having at least a high speed and a low speed mode of operation comprising:

a rotor assembly;

a stator core constructed from a stack of laminations of suitable magnetic material, each of said laminations having

a central opening therethrough with a plurality of notches extending generally radially outwardly from said central opening, the latter constituting a bore extending longitudinally through said core for reception of said rotor assembly and said notches constituting a plurality of slots extending longitudinally through said core for forming a plurality of winding receiving slots;

a main winding including two physical poles, the latter each having one or more coils therein which are inserted in selected slots of said core with the main winding physical poles being on generally opposite sides of said bore, said main winding having a first predetermined number of effective turns therein in high speed mode and a second predetermined number of effective turns in low speed mode of operation;

a supplemental winding including two physical poles, the latter each having at least one coil which is inserted in selected slots of said core, said supplemental winding having a third predetermined number of effective turns therein;

a first auxiliary winding;

a second auxiliary winding; and

a plurality of leads electrically connected to said main, supplemental, and auxiliary windings for multiple speed operation of said dynamoelectric machine, said leads being so connected to said windings such that during high speed operation of the dynamoelectric machine said supplemental winding is energized and the high speed breakdown torque of the dynamoelectric machine is proportional to the inverse square of the sum of said first predetermined number of turns in said main wind plus the predetermined number of effective turns in said supplemental winding, and such that during low speed operation said supplemental winding is de-energized and the low speed breakdown torque of the dynamoelectric machine is proportional to the inverse square of the said second predetermined number of effective turns of said main winding whereby the torque of the dynamoelectric machine when operated at low speed may be preselected to be less than, equal to, or greater than the torque of the dynamoelectric machine when operated at high speed by selectively varying the number of turns in said main and supplemental winding.

4,322,666

BRUSHLESS, PERMANENT MAGNET D-C PULSE CURRENT CONTROLLED, ESSENTIALLY UNIFORM TORQUE DYNAMO ELECTRIC MACHINE PARTICULARLY MOTOR

Rolf Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst Motoren GmbH & Co., KG, St. Georgen, Fed. Rep. of Germany

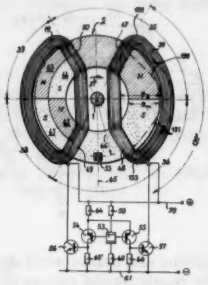
Continuation-in-part of Ser. No. 212,502, Dec. 8, 1980, which is a continuation of Ser. No. 127,641, Mar. 3, 1980, abandoned, which is a division of Ser. No. 919,702, Jun. 27, 1978, Pat. No. 4,211,963. This application Apr. 2, 1981, Ser. No. 250,224

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1977, 2730142

Int. Cl.³ H02K *29/02*

U.S. Cl. 318—254 **83 Claims**

1. A brushless permanent magnet d-c motor comprising a stator winding means providing an advancing field with the windings of the winding means located at positions corresponding to number of 2p of possible periodic winding position the winding at each position providing a magnetic field effective over from about 100° to 150° electrical; a permanent magnet moving element adapted to the stator by maintaining an air gap relative to the stator and having a magnetization in the area of each pole pitch of 180° electrical comprising two successive zones along the direction of motion of the permanent magnet moving element, in a first zone the magnetization of the permanent magnet moving element if of one polarity and in an adjacent second zone the magnetization of the permanent magnet moving element has perpendicular to the direction of said motion two adjacent sections of opposite magnetization, wherein the magnetic field provided by the winding at each position is effective at the air gap between the permanent magnet moving element and the stator; magnetic sensing means attached to the stator and responsive to the magnetization of the section of the second zone having the same magnetic direction as the magnetic direction of the first zone; and current switching control means connected to the sensing means and connected to the winding means for providing to the winding means periodic current flow.



4,322,667

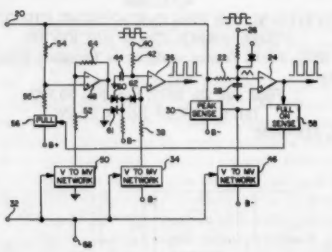
DC MACHINE CONTROL CIRCUIT

Shunjiro Ohba, 5969 N. Elston Ave., Chicago, Ill. 60646

Filed Aug. 17, 1979, Ser. No. 67,314

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—338 **10 Claims**



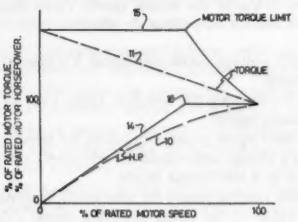
1. A control system for automatically controlling the coefficient of excitation in a DC machine having an armature winding and a field winding, said DC machine typically being operated under conditions wherein the demand varies from time to time, said control system operating independently of armature r.p.m. and armature voltage, said system comprising: generator means for generating a pulse signal having a predetermined frequency and pulse width; demand signal means for producing an electrical demand signal corresponding to the demand on said DC machine; armature current sensing means coupled to said armature winding for producing an electrical drive signal corresponding to the actual armature current in said DC machine independently of armature r.p.m. and armature voltage; pulse width sensing means coupled to said generator means for sensing the pulse width of said pulse signal and developing a corresponding pulse width signal; pull up circuit means coupled to said pulse width sensing means and responsive to said pulse width signal for generating a deactivating signal; control circuit means coupled to said generator means and to said pull-up circuit means and responsive to said demand signal, said deactivating signal and said drive signal for adjusting said pulse width of said pulse signal; and means, coupled between said control circuit means and said armature winding and said field winding, and responsive to said pulse

signal, for applying signals to said armature winding and said field winding which vary in accordance with said adjusted pulse width throughout the entire operating range of said DC machine, whereby the coefficient of field excitation is varied in accordance with the corresponding demand and armature current to substantially increase the efficiency of the DC machine.

4,322,668
POWER CONTROL OF A STALLING MOTOR

Ronald C. Trussler; Stanley V. Reiten, and William A. Wyeth, all of Peterborough, Canada, assignors to Canadian General Electric Company Ltd., Toronto, Canada

Continuation of Ser. No. 829,394, Aug. 31, 1977, abandoned. This application May 29, 1979, Ser. No. 43,076
Claims priority, application Canada, Nov. 12, 1976, 265450
Int. Cl.³ H02P 5/16
U.S. Cl. 318—434 **10 Claims**



1. A control system for controlling a motor which may be subjected to stalling conditions, comprising

a motor having a rated current for continuous operation and a maximum transient overload current limit,

a controllable source of electrical power connected to said motor,

reference means for determining a current reference for said motor and providing a first signal representing said current reference,

sensing means for sensing motor current and providing a second signal representing the sensed current,

means for receiving said first and second signals and providing a control signal representing their difference,

control means connected to said power source and responsive to said control signal for determining the output of the source, and

means for detecting a stalling condition of said motor connected to said reference means for altering said first signal during stalling conditions to require a controlled non-linear increase in motor current over said rated current to maintain motor power at its rated output as motor speed decreases until the motor current reaches said maximum transient overload current and then maintaining said maximum overload current.

4,322,669
DEVICE FOR CONTROLLING THE FEED OF MACHINE TOOLS

Nobuo Fukuma; Yoshito Kato, both of Aichi, and Takao Terui, Saitama, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi and Yaskawa Electric Mfg. Co. Ltd., Fukuoka, both of, Japan

Continuation-in-part of Ser. No. 760,110, Jan. 17, 1977, abandoned. This application Jul. 5, 1979, Ser. No. 54,692
Claims priority, application Japan, Jan. 16, 1976, 51-4530
Int. Cl.³ G05B 19/25
U.S. Cl. 318—571 **2 Claims**

1. An apparatus for controlling a DC motor driven screw feed which moves a table of a machine tool into predetermined positions, said apparatus comprising:

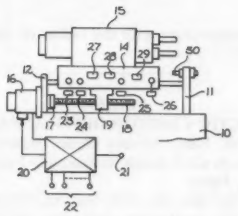
a DC motor for moving the table;

a plurality of limit switches provided adjacent to said table for generating signals corresponding to the positions of said table;

a rate change control circuit which receives the signals from said limit switches and changes a rate of revolution of said DC motor when said table reaches predetermined rate change positions for cutting, fast feed and fast return;

a dwell limit switch provided adjacent to said table for generating a signal to decrease a current limit value from a first limited value to a second limited value when said table has reached a position immediately before a predetermined dwell position;

a stationary rigid stopper securely fixed to a base of said machine tool for abutting on said table directly to stop said table at said predetermined dwell position, said stopper being provided separately from said dwell limit switch; and



a current limit circuit receiving the signals from said rate change control circuit and said dwell limit switch to supply said DC motor with a current, said current limit circuit controlling a value of said current equal to or lower than said first limited value sufficient for cutting, fast feed and fast return until said table operates said dwell limit switch and controlling the value of said current equal to or lower than said second limited value after said table operates said dwell limit switch, and maintaining the value of said current of said second limited value for a predetermined period of time for causing dwell pressure between said table and said stopper after said table abutts on said stoppers, said first limited value being equal to or lower than a value for protecting the whole circuit of said apparatus, said second limited value being lower than said first limited value and sufficient for said table to dwell.

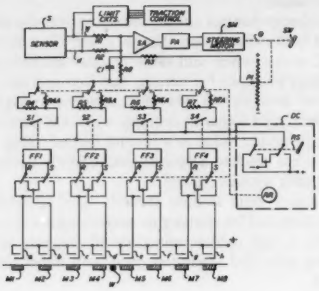
4,322,670
LAND VEHICLE GUIDANCE METHOD AND APPARATUS

Charles L. Taylor, Binghamton, N.Y., assignor to The Raymond Corporation, Greene, N.Y.

Continuation-in-part of Ser. No. 840,504, Oct. 7, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 26,041
Int. Cl.³ B62D 1/24
U.S. Cl. 318—587 **30 Claims**

1. In a guided ground vehicle having sensor means for sensing deviations of said sensor means from a reference path having a straight portion and a curved portion, command signal forming means responsive to signals from said sensor means for providing steering command signals which vary in accordance with a predetermined function of the position of said sensor means relative to said path, and steering means responsive to said command signals for steering said vehicle, the combination of: turning control means operative while said

vehicle travels along said curved portion of said path for modifying said steering command signals by an amount substantially



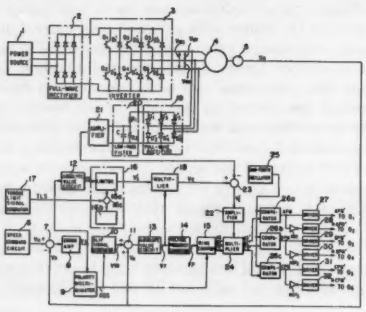
inversely commensurate with the radius of curvature of said curved portion.

4,322,671

INDUCTION MOTOR DRIVE APPARATUS

Shigeki Kawada, Hino; Hiroshi Ishida, Hamura, and Yutaka Koiwai, Tokyo, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Dec. 26, 1979, Ser. No. 107,088
Claims priority, application Japan, Dec. 30, 1978, 53-164135
Int. Cl.³ H02P 5/40
U.S. Cl. 318—798 **14 Claims**



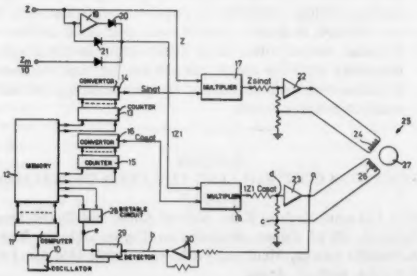
1. An induction motor drive apparatus comprising:
an inverter for converting DC voltage into three-phase AC primary voltage;
an induction motor driven by the three-phase AC primary voltage;
speed command means for providing a command speed V_N to the induction motor;
actual speed detecting means for detecting the actual speed V_n of the induction motor;
speed deviation signal generating means for generating a speed deviation signal based on the difference between the command speed V_N and the actual speed V_n of the induction motor;
primary voltage signal generating means for generating a primary voltage command signal V_E for controlling the amplitude of said three-phase AC primary voltage;
primary frequency signal generating means for generating a primary frequency command signal V_F corresponding to the frequency of said three-phase AC primary voltage;
rectangular wave signal generating means for producing three-phase rectangular wave signals of a frequency which conforms to the primary frequency command signal V_F and of an amplitude conforming to the primary voltage command signal V_E;
pulse forming means for converting each said rectangular wave into a series of closely spaced pulses and for modulating in width each said pulse of each of the three-phase rectangular wave signals in accordance with the magnitude of the primary voltage command signal V_E; and
means for applying said width-modulated closely spaced pulses selectively to said inverter to produce said three-phase AC primary voltage from said DC voltage for driving said induction motor;
wherein the primary frequency command signal V_F generating means comprises:
constant speed signal generating means for generating a constant speed signal V_{SO} of a predetermined constant value and with a polarity determined by the polarity of the speed deviation signal; and
adding means for generating the primary frequency command signal V_F by adding the respective constant speed signal $\pm V_{SO}$ to the actual speed V_n of the induction motor and for outputting the absolute value of this sum; and
the primary voltage command signal V_E generating means comprising:
means for forming the absolute value $|V_s|$ of the speed deviation signal;
torque limit signal generating means for selectively generating a torque limit signal for selectively operating said motor in a low-torque mode;
amplitude control means for selectively limiting the absolute value of the speed deviation signal $|V_s|$ and for outputting the selectively limited value $|V_s'|$ in response to the torque limit signal; and
a multiplier for generating the primary voltage command signal V_E by multiplying the selectively limited output $|V_s'|$ of the amplitude control means by said primary frequency command signal V_F for determining said amplitude of said rectangular wave signals.

4,322,672

ELECTRIC MOTOR CONTROL APPARATUS

Donald F. Walker, West Lothian, Scotland, assignor to Ferranti Limited, Gatley, England

Filed Nov. 16, 1979, Ser. No. 94,827
Claims priority, application United Kingdom, Nov. 22, 1978, 45536/78
Int. Cl.³ H02P 5/34, 7/42
U.S. Cl. 318—800 **8 Claims**



1. Electric motor control apparatus for an alternating-current induction motor having a low-resistance rotor and two stator windings 90° apart, which includes a variable frequency oscillator, a counter clocked by the oscillator, signal generating means responsive to the counter output to generate two sinusoidal voltages in quadrature with one another, amplifier means operable to apply each sinusoidal voltage to a separate

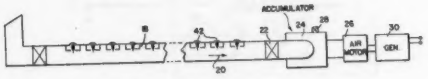
one of the stator windings under constant current conditions, and control means operable to vary the frequency of the two sinusoidal voltages in such a manner that the torque developed by the motor remains substantially at a maximum value despite changes in the speed of rotation of the motor.

4,322,673

HIGHWAY PRESSURE-RESPONSIVE MEANS FOR GENERATING ELECTRICITY BY VEHICLES

Joseph Dukess, 931 Greacen Point, Mamaroneck, N.Y. 10543

Filed Jul. 2, 1979, Ser. No. 54,277
Int. Cl.[3] H02P *9/00*; F03G *5/00*
U.S. Cl. 322—35 2 Claims



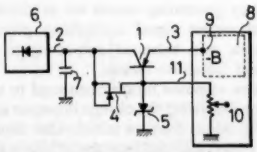
1. An energy conservation and highway safety apparatus for supplying supplementary electrical power caused by passage of vehicles over the apparatus comprising a plurality of elongated conduits embedded across a roadway, a plurality of pressure responsive means mounted in said each of conduits and extending above the surface of the roadway for pumping air through said conduits when a vehicle passes thereover while providing a warning to the vehicle, each of said pressure responsive means including a one way exhaust valve for delivering air of under pressure into one of said conduits, each of said pressure responsive means including a one way intake valve to suck air back therein from the atmosphere, accumulator means connected to said conduits, motor means connected to said accumulator means and actuated by air pressure from said accumulator means, a generator, said motor means driving said generator for producing electrical energy, each of said pressure responsive means being deformable and including a dome rising above the surface of the roadway, and a spring in each of said pressure responsive means for restoring the shape thereof after depression and for drawing air back into said pressure responsive means.

4,322,674

TRANSISTORIZED VOLTAGE REGULATOR

Susumu Kanno, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1980, Ser. No. 175,951
Claims priority, application Japan, Aug. 11, 1979, 54-110845[U]
Int. Cl.[3] G05F *3/18*
U.S. Cl. 323—231 1 Claim



1. In a transistorized voltage regulator comprising, a transistor having a collector electrode connected to an input terminal, an emitter electrode connected to an ouput terminal and a base electrode connected to said input terminal through means for providing a constant current, and means including a zener diode connected between the base of said transistor and ground for regulating the voltage to the base of said transistor, the improvement comprising:

a first output terminal connected to said emitter electrode for supplying regulated voltage to a high-power dissipation load; and

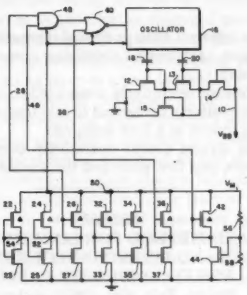
a second output terminal connected to the base of said transistor for supplying regulated voltage to a low-power dissipation load.

4,322,675

REGULATED MOS SUBSTRATE BIAS VOLTAGE GENERATOR FOR A STATIC RANDOM ACCESS MEMORY

Yong K. Lee, Mountain View, and Joseph R. Domitrowich, San Martin, both of Calif., assignors to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Nov. 3, 1980, Ser. No. 203,183
Int. Cl.[3] H03L *1/00*; H03K *3/353*
U.S. Cl. 323—277 6 Claims



1. MOS bias voltage regulating circuitry for establishing a predetermined substrate bias voltage level for an associated static random access memory, said regulating circuitry including an oscillator for generating a pair of oppositely phased output signals, a charge pump coupled to said oscillator and responsive to said pair of output signals for generating the bias voltage output, and control circuitry for controlling the operation of said oscillator, said control circuit comprising:

under-current sensing circuitry for generating an oscillator inhibiting signal whenever the memory current drops below a predetermined level;

bias voltage level sensing circuitry for generating a second oscillator inhibiting signal when the substrate bias voltage level exceeds a predetermined level; and

over-current sensing circuitry for generating an oscillator enabling signal whenever said memory current exceeds a predetermined level, said enabling signal controlling the operation of said oscillator irrespective of the existence of said second oscillator inhibiting signal.

4,322,676

BIAS CIRCUIT

Kazuhiro Toyoda, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 30, 1979, Ser. No. 62,312
Claims priority, application Japan, Aug. 2, 1978, 53-94203
Int. Cl.[3] G05F *5/00*
U.S. Cl. 323—303 10 Claims

4. A bias circuit, having first and second terminals for connection to a supply voltage, comprising:

a first stabilizing power supply circuit for supplying a regulated output voltage at a regulated output voltage terminal, said first stabilizing power supply circuit having a control current terminal and a detecting transistor, for receiving a control current and for detecting and absorbing variations in the supply voltage, said regulated output voltage varying in dependence upon said control current;

a temperature compensating circuit, operatively connected

to said control current terminal of said first stabilizing power supply circuit, for supplying said control current to said first stabilizing power supply circuit, said control current causing said regulated output voltage to vary with the ambient temperature; and

a second stabilizing power supply circuit, operatively connected to said temperature compensating circuit, for supplying a constant voltage to said temperature compensating circuit, said second stabilizing power supply circuit comprising:

a first resistor operatively connected to the first terminal and operatively connected to said temperature compensating circuit at a first node; and

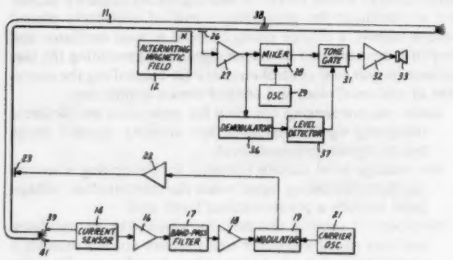
first and second diodes operatively connected in series between said first node and the second terminal.

4,322,677

SYSTEM AND METHOD FOR LOCATING RESISTIVE FAULTS AND INTERCONNECT ERRORS IN MULTI-CONDUCTOR CABLES

Benjamin K. Wright, Palo Alto, Calif., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 16, 1979, Ser. No. 20,981
Int. Cl.³ G01R *31/08*
U.S. Cl. 324—52 **6 Claims**



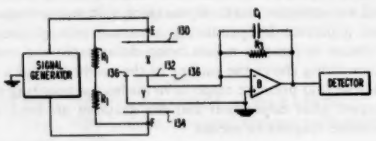
1. In a system for use with a cable having a plurality of conductors for locating a resistive fault associated with two non-paired conductors of the cable and locating an interconnect fault due to a cross-connection between the conductors of two pairs of conductors of the cable establishing faulted pairs: a sensor for connection between said two non-paired conductors of the cable toward one end thereof in the case of a resistive fault and for connection on one side of the fault between the conductors of a faulted pair due to an interconnect error while said faulted pair is connected together at a point on the other side of the fault; means for applying an alternating magnetic field at an audio frequency at successive points along the cable to induce a voltage on the conductors to which the sensor is connected, said voltage producing a signal at said sensor of a first predetermined character when the magnetic field is applied between the sensor and the fault and said voltage producing a signal at said sensor of a second predetermined character when the field is applied beyond the fault; means operatively connected to said sensor for monitoring said signal produced at said sensor to determine the location of the fault, including means for transmitting a signal corresponding to said signal produced at said sensor over the cable to be monitored at the points where the magnetic field is applied, said means for transmitting including a carrier source, means for modulating the carrier in accordance with said signal produced at said sensor, and means for applying the modulated carrier to the cable; means movable along the cable for receiving the transmitted signal; means responsive to the received transmitted signal for generating an audio tone; means for demodulating the received transmitted signal; and means responsive to the level of the demodulated signal for interrupting said audio tone when the demodulated signal reaches a predetermined level.

4,322,678

IDENTIFICATION OF MATERIALS USING THEIR COMPLEX DIELECTRIC RESPONSE

Larry H. Capots, 8622 Chapel Dr., Annandale, Va. 22003; James George, 809 W. Broad St., Falls Church, Va. 22046, and Luigi Morelli, 305 E. Davis St., Sterling, Va. 22170

Filed Oct. 30, 1979, Ser. No. 89,296
Claims priority, application Italy, Oct. 30, 1978, 29252 A/78
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R **10 Claims**



1. Apparatus for identifying material having frequency responsive conductive and/or dielectric properties, comprising:

(a) capacitive means for producing an output signal and for producing a change in output signal when said material to be identified is brought within the influence of said capacitive means, said capacitive means including at least two capacitive elements, one of said capacitive elements being a material sensing capacitive element and another of said capacitive elements being a referencing capacitive element;

(b) frequency generating means for producing a balanced electrical output signal comprising plural preselected frequencies, said balanced output signal being applied across said capacitive means;

(c) capacitive response means connected to said capacitive means for evaluating the change in output signal from said capacitive means from an initial value determined in the absence of said material from the influence of said material sensing capacitive element to a different value obtained when said material is placed within the influence of said material sensing capacitive element;

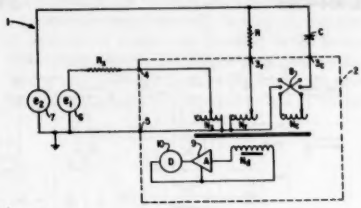
(d) output signal component resolving means for resolving said change in output signal from said capacitive means into separate components which are a capacitive component and a conductive component, for each of said plural preselected frequencies, thereby to identify said material brought within the influence of said material sensing capacitive element.

4,322,679

ALTERNATING CURRENT COMPARATOR BRIDGE FOR RESISTANCE MEASUREMENT

William J. M. Moore, and Norbert L. Kusters, both of Ottawa, Canada, assignors to Canadian Patents & Dev. Limited, Ottawa, Canada

Filed Apr. 7, 1980, Ser. No. 137,899
Int. Cl.³ G01R 27/02
U.S. Cl. 324—62 4 Claims



1. An ac comparator bridge for measuring an unknown resistor comprising:

current comparator means having first primary winding means N_x, first secondary winding means N_r having a variable number of turns, and a second secondary winding means N_c having a variable number of turns;

ac voltage source means;

standard resistor means connected between the voltage source means and the first secondary winding means N_r;

standard reactive means connected between the voltage source means and the second secondary winding means N_c;

terminal means between the voltage source means the the primary winding means N_x for connection to the unknown resistor; and

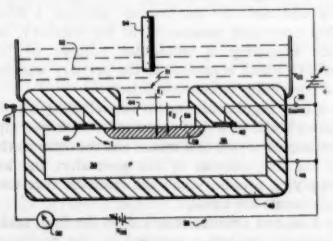
detector means for determining ampere-turn balance between the primary and the secondary winding means whereby the value of the unknown resistor is a function of the voltage source means voltage, the resistive means, the reactive means and the number of turns in the primary and secondary winding means.

4,322,680

CHEMICALLY SENSITIVE JFET TRANSDUCER DEVICES UTILIZING A BLOCKING INTERFACE

Jiri Janata, and Roland W. Ure, Jr., both of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Mar. 3, 1980, Ser. No. 126,746
Int. Cl.³ G01N 27/00
U.S. Cl. 324—71 SN 37 Claims



1. A chemical sensitive junction field-effect transistor transducer for detecting chemical properties of substances to which said transducer is exposed comprising:

(a) a substrate material;

(b) a semiconductor layer having a doping polarity located at an upper surface of said substrate material, said doping polarity enabling an electrical current to flow through said layer;

(c) means for electrically connecting spaced apart regions of said semiconductor layer to an external voltage source, thereby allowing an electrical current to flow from said voltage source to a first of said spaced apart regions through a first of said electrical connecting means, through said semiconductor layer to a second of said spaced apart regions, and from said second spaced apart region through a second of said electrical connecting means back to said external voltage source;

(d) a blocking interface overlying that portion of said semiconductor layer that lies between said spaced apart regions and through which said electrical current flows, said blocking interface being adapted to interact with said substance so as to generate an electrical potential at said interface whose strength is a measure of selected chemical properties of said substance, said blocking interface having no insulating layer as a part thereof;

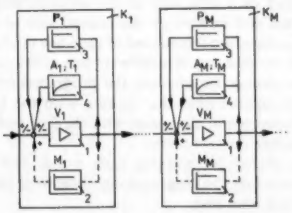
(e) a reference electrode connected in circuit relationship with said semiconductor layer through a second external voltage source such that a potential is created and added to the electric potential generated at said blocking interface, thus creating a resultant electric field that affects the conductivity of said semiconductor layer as a measure of the chemical properties of said substances by modulating the thickness of a depletion layer in the upper surface of said semiconductor layer which is void of free charge carriers, said depletion layer having a thickness related to said resultant electric field.

4,322,681

MODULE FOR ANALYZING AND LINEARIZING OF ELECTRICAL SIGNALS FROM UNKNOWN SYSTEMS AND METHOD FOR USING IT

Alwin Luttmann, Wieste 24, 4476 Werlte; Andreas Plaas-Link, Hardenbergstr. 47, 5900 Siegen, and Klaus Mückenhoff, Gartenweg 5, 4600 Dortmund, all of Fed. Rep. of Germany

Continuation of Ser. No. 880,199, Feb. 22, 1980, abandoned.
This application Jan. 28, 1980, Ser. No. 115,669
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1977, 2707575
Int. Cl.³ G01R 23/16
U.S. Cl. 324—77 D 6 Claims



1. A module adapted for use with others of like kind in a series chain in order to analyze and linearize frequency characteristics of unknown systems, comprising:

an amplifier with an input and an output;

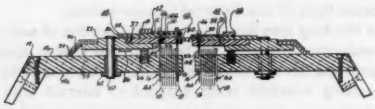
a first feedback network with a variable gain, the first feedback network being connected between the input and the output; and

a second feedback network with a variable first order time delay, the second feedback network being connected between the input and the output.

4,322,682
VACUUM ACTUATED TEST HEAD HAVING PROGRAMMING PLATE

Karl H. Schadwill, Pomona, Calif., assignor to Everett/Charles Inc., Rancho Cucamonga, Calif.

Filed May 21, 1979, Ser. No. 40,704
Int. Cl.[3] G01R 31/02; H01R 4/64
U.S. Cl. 324—158 F 17 Claims



1. A vacuum actuated test head having easily changeable test pin programming plate for minimizing the forces required for actuation and for contacting a substantially planar unit under test comprising:

a base having first and second opposite sides;

a plurality of contact probes mounted in the base, each contact probe comprising, in a substantially common plane, a spring loaded first end located at and urged away from the first side of the base, and a second end located at the second side of the base, the first ends of the contact probes being arranged in a spaced apart array;

a mounting member mounted for reciprocal movement relative to the first side of the base, the mounting member comprising an opening providing access therethrough to the first ends of the contact probes and a plate support facing away from the base;

a programming plate having mounted therein a plurality of axially elongated and axially rigid test pins which are axially movable in and relative to the programming plate, the total number of test pins being less in number than the contact probes, each of the test pins having a first end located on a first side of the programming plate and a second end located on the second side of the programming plate, the second end of each test pin being alignable with the first end of a different one of the contact probes;

a plate aligner for aligning the programming plate on the plate support over the opening with the second end of each test pin in alignment with the first end of the corresponding contact probe;

a unit aligner for aligning such a unit under test, when mounted on the programming plate, over the first ends of the test pins; and

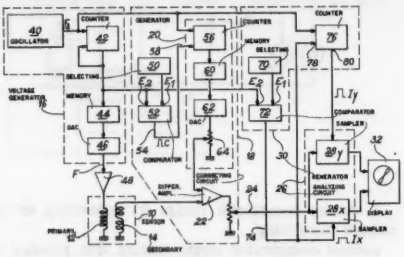
means for forming at least a portion of a vacuum chamber intermediate the base and such mounted unit under test comprising a flexible and collapsible seal intermediate the mounting member and the base;

vacuum applied in the vacuum chamber drawing such mounted unit under test and the base relatively closer together, forcing the programming plate to move toward the base, thereby causing the test pins to be resiliently biased against the unit under test by the spring loaded first ends of the contact probes, thereby providing electrical connection from the unit under test through the test pins and the corresponding electrical contact probes.

4,322,683
CONTROL APPARATUS FOR EDDY CURRENT NON-DESTRUCTIVE TESTING USING A DIGITAL COMPENSATING CIRCUIT

David D. Vieira, Puyricard; Jacques Dinard, Manosque, and Alain Stössel, Aix en Provence, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 3, 1980, Ser. No. 126,364
Claims priority, application France, Mar. 9, 1979, 79 06149
Int. Cl.[3] G01R 33/12; G01N 27/90
U.S. Cl. 324—225 5 Claims



1. A control apparatus utilizing eddy currents and comprising:

a sensor contituted by a primary winding and a secondary winding,

a sinusoidal exciting voltage generator having a given frequency F, said generator supplying the primary winding,

a correcting circuit for eliminating the residual voltage supplied by the secondary winding of the sensor, said circuit comprising a compensating voltage generator having an output delivering a compensating voltage at frequency F of the exciting voltage and having a regulatable amplitude and phase, and a differential amplifier having two inputs, one receiving the compensating voltage and the other the voltage supplied by the sensor and one output supplying a corrected measuring voltage,

a circuit for analyzing the corrected measuring voltage, said circuit comprising two samplers operating at the frequency of the generator and in phase quadrature with respect to one another, said samplers being controlled by pulses processed by an appropriate means connected to the generator, said samplers having each an input connected to said output of said differential amplifier,

means for displaying the two signals supplied by the two samplers, wherein:

(A) the exciting voltage generator is of the digital type and comprises an oscillator transmitting pulses at a stabilised frequency Fs, a first counter of maximum capacity C connected to the oscillator, a first memory containing a Table of C digital values of the sine function, said memory being addressed by the counter content, a first digital-analog converter connected to the memory, said converter supplying a sinusoidal voltage of frequency F=Fs/C which is applied to the primary winding,

(B) the correcting circuit comprises:

(i)—a first regulatable means for selecting a number between 0 and C, a first comparator with two inputs, one connected to said first means and the other to the output of the first counter of the generator, and an output supplying a pulse when the numbers received by the two inputs are equal,

(ii)—a second counter identical to the first, said counter receiving the pulses supplied by the oscillator of the digital generator and having a zeroing input connected to the output of the first comparator,

(iii)—a second memory containing a Table of C of digital values of the sine function, said memory being ad-

dressed by the content of the second counter, a second digital-analog converter connected to the memory and a regulatable potentiometer having an input connected to the output of the converter and an output which is said output of said compensating voltage generator and which is connected to one input of said differential amplifier,

(C) the means for generating the control pulses of the samplers comprises:

(i)—a second means for selecting a number between 0 and C, a second comparator with two inputs, one connected to said second means and the other to the first counter of the generator and an output supplying a pulse when the two numbers received by the inputs are equal, said output being directly connected to one of the samplers.

4,322,684

IMAGING SYSTEMS

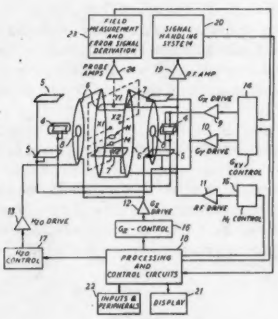
Godfrey N. Hounsfield, Newark, England, assignor to E M I Limited, Hayes, England

Filed Nov. 6, 1979, Ser. No. 91,808

Claims priority, application United Kingdom, Nov. 16, 1978, 44809/78

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—309 **12 Claims**



1. A method, of examining a body by means of nuclear magnetic resonance, including:

(a) inducing resonance in a plurality of substantially parallel planar slices of said body and deriving a resonance signal for each of said slices,

(b) rotating said slices together through a predetermined plurality of angular steps about a first axis substantially parallel to the planes thereof and repeating step (a) after each of said angular steps,

(c) processing the derived resonance signals to provide integrals of a quantity related to said resonance for each of a plurality of lines parallel to said first axis,

(d) rotating said slices together through a predetermined plurality of further angular steps about a second axis substantially perpendicular to said first axis and repeating steps (a), (b) and (c) after each of said angular steps, and

(e) processing the integrals obtained for lines after each of said further angular steps to obtain measurements of said quantity in each element of a three dimensional matrix of elements in said body.

4,322,685

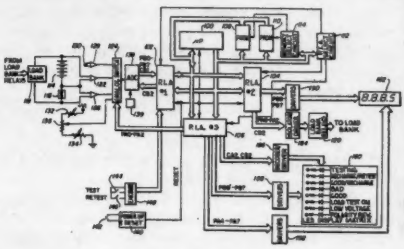
AUTOMATIC BATTERY ANALYZER INCLUDING APPARATUS FOR DETERMINING PRESENCE OF SINGLE BAD CELL

Charles E. Frailing, Milwaukee; Thomas J. Dougherty, Waukesha, and Richard T. Johnson, Hubertus, all of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Feb. 29, 1980, Ser. No. 126,165

Int. Cl.³ G01N *27/42*

U.S. Cl. 324—429 **50 Claims**



1. Apparatus for determining the acceptability of a storage battery under test and comprising:

first circuit means for coupling to the battery under test and performing a load test on said battery;

second circuit means for coupling to the battery under test and performing a voltage bounce back test on said battery;

third circuit means for coupling to the battery under test, placing a load on said battery, and testing whether the rate of change of the battery voltage exceeds a predetermined value; and

fourth circuit means coupled to said first, second, and third circuit means for controlling the sequence in which the tests of said first, second, and third circuit means are performed and providing a readout responsive to outputs of said first, second, and third circuit means.

4,322,686

FREQUENCY COMPARATOR CIRCUIT

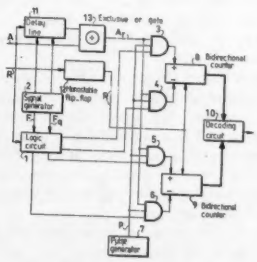
Henri Butin, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 27, 1980, Ser. No. 125,279

Claims priority, application France, Mar. 16, 1979, 79 06742

Int. Cl.³ H03K *13/32, 5/26;* H03L *7/24*

U.S. Cl. 328—119 **3 Claims**



1. A frequency comparator circuit which comprises a signal input for receiving a signal to be investigated, a signal generator for supplying a first reference signal of period T and a second reference signal of period T, phase-displayed by T/4 compared with the first reference signal, comparison means coupled to the signal input and to the signal generator for comparing the signs A, F, F_q of the respective instantaneous

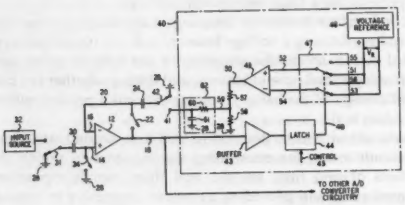
amplitudes of the signal to be investigated, the first reference signal and the second reference signal, counting means, having a locking input, coupled to the comparison means for supplying a first counting signal proportional to the difference between the sums of the time slots where A differs from F and F_q and where A is identical to F and F_q and a second counting signal proportional to the difference between the sums of the time slots where A differs from F and is identical to F_q and where A is identical to F and differs from F_q, a delay circuit whose delay time is KT (K positive integer) coupled to the signal input and having an output and a locking circuit having two inputs respectively coupled to the signal input and to the output of the delay circuit and an output coupled to the locking output of the counting means for locking the operation of the counting means when the signs of the amplitudes of the signals on said two inputs are identical.

4,322,687

OPERATIONAL AMPLIFIER WITH IMPROVED OFFSET CORRECTION

Mirmira R. Dwarakanath, Berkeley Heights, and Douglas G. Marsh, Howell Township, Monmouth County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 19, 1980, Ser. No. 151,534
Int. Cl.³ H03F *1/34*
U.S. Cl. 330—9 **10 Claims**



1. An amplifier (12) having a first input terminal (16), a second input terminal (14) for connection to an input signal source (32), an output terminal (18), and a feedback loop (20) connecting said first input terminal with said output terminal, the operating characteristics of the amplifier being such that input offset voltage compensation circuitry is required for obtaining the desired output terminal voltage, said circuitry comprising

a first switch means (22) arranged to shunt said feedback loop when closed;

a first capacitor (24) connected at a first side between said first input terminal and said first means;

a second capacitor (30) connected at a first side to said second input terminal;

a second switch means (34) arranged to selectively connect said second input terminal to a reference potential (28);

a third switch means (26) connected on one side to the second side of said first capacitor and arranged to selectively connect said second side of said first capacitor either to said reference potential or to said output terminal of said operational amplifier and said circuitry being further characterized by

means (43, 44, 45) for sampling the output of said amplifier at preselected intervals; and

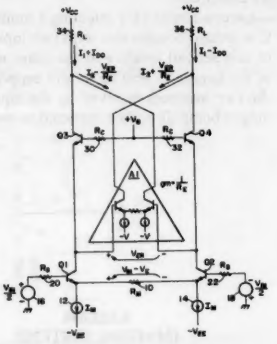
means (46, 47, 49, 57, 58, 60, 61) responsive to the polarity of said sampled signal for generating an error correction voltage having a magnitude equal to the differential charge produced across said first and second input terminals by the finite gain of said amplifier and the operation of said first and second means, said error correction voltage compensating for said differential charge when applied to a preselected one of said input terminals.

4,322,688

CASCODE FEED-FORWARD AMPLIFIER

Kenneth G. Schlotzhauer, Beaverton, and Arthur J. Metz, Gervais, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 11, 1979, Ser. No. 83,873
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—252 **2 Claims**



1. A feed-forward amplifier, comprising:

a main amplifier comprising an emitter coupled pair of transistors for converting an input signal to a differential signal current;

a common-base amplifier stage coupled to said main amplifier, said common-base amplifier stage comprising a pair of transistors through which said differential signal current passes;

a correction amplifier having a pair of inputs coupled between said main amplifier and said common-base amplifier stage, and a pair of outputs cross-coupled in a current-aiding sense with the outputs of said common-base amplifier; and

means for altering the conduction of said correction amplifier to compensate for alpha-induced error in the differential signal current path, said means comprising a pair of resistors having a predetermined resistance value serially disposed between the bases of said pair of transistors of said common-base amplifier stage, across which resistors an error voltage proportional to said input signal is developed.

4,322,689

HIGH FREQUENCY PULSE AMPLIFIER

Peter Schucht, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

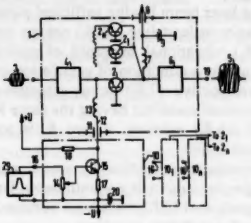
Filed Jan. 18, 1980, Ser. No. 113,173
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2904011
Int. Cl.³ H03F *3/19*; H03G *3/30*
U.S. Cl. 330—285 **15 Claims**

1. A high frequency power amplifier comprising:

a power amplifier stage including a transistor having a grounded base, a collector and an emitter, an input matching network including an input for receiving high frequency pulses to be amplified and an output connected to said emitter, and an output matching network including an input connected to said collector and an output for emitting an amplified high frequency pulse; and

constant current means including a constant current source connected to said emitter for providing a constant current pulse to the collector-emitter path of said transistor corresponding to the envelope of the input high frequency

pulses, and a pulse generator connected to said constant current source and operable to activate said constant



current source with pulses having a shape corresponding to the envelope of the high frequency input pulses.

4,322,690

DEVICE FOR PROTECTING AN AUDIO AMPLIFIER AGAINST OVERLOAD OR SHORT-CIRCUIT

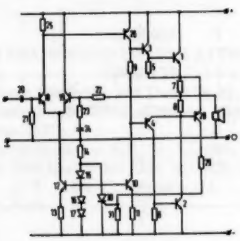
Robert R. Laupman, Wychen, Netherlands, assignor to Novanex Automation N.V., Wychen, Netherlands

Filed Nov. 26, 1979, Ser. No. 97,159

Claims priority, application Netherlands, Nov. 24, 1978, 7811584

Int. Cl.³ H03F 3/04

U.S. Cl. 330—298 8 Claims



1. In an audio amplifier circuit, the combination of:

a supply voltage terminal;

an output transistor and a measuring resistor, the current-conducting electrodes of said transistor being connected in series with said resistor to define an output terminal of the amplifier;

control means connected to the control electrode of said transistor for biasing said transistor to conduct current in accord with an audio signal, said control means comprising a current source transistor, a current limiting resistor connected to said supply voltage terminal in series with the current-conducting electrodes of said current source transistor, low voltage bias means connecting said supply voltage terminal to the control electrode of said current source transistor, and current varying means connected in series with said current-conducting electrodes of said current source transistor;

a thyristor having anode, cathode and control electrodes, the anode and cathode electrodes being connected essentially in parallel with said low voltage bias means whereby the thyristor is essentially immune to spurious pulses on said supply voltage terminal; and

means responsive to excess current flowing through said measuring resistor and connected to the control electrode of said thyristor for decoupling the output transistor.

4,322,691

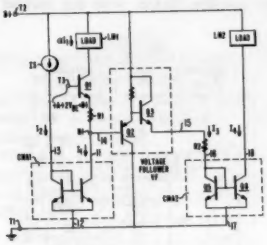
CIRCUITRY FOR GENERATING ELECTRIC SIGNALS WITH PROPORTIONAL, OPPOSITE-SENSE RATES OF CHANGE

Max E. Malchow, Raritan Township, Somerset County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 24, 1980, Ser. No. 143,346

Int. Cl.³ H03F 3/26

U.S. Cl. 330—301 5 Claims



1. Apparatus for generating first and second signals that exhibit proportional but opposite-sense rates of change, comprising:

first, second, and third supply terminals for receiving a reference voltage, an operating voltage, and a bias voltage intermediate to said reference and operating voltages;

first and second resistive means having respective first and second ends;

means for applying a changing input current between said first terminal and the first end of said first resistive means;

a first transistor having an emitter electrode to which the second end of said first resistive means is connected, having a base electrode to which said third terminal is connected and having a collector electrode;

first load means connected to the collector of said first transistor for providing a direct-current-conductive path to said second terminal;

a non-inverting voltage amplifier having an input connection at the first end of said first resistive means and having an output connection at the first end of said second resistive means;

a current mirror amplifier having an input connection with the second end of said second resistive means, having a common connection to said first terminal, and having an output connection;

second load means connected to the output connection of said current mirror amplifier for providing a direct-current-conductive path to said second terminal.

4,322,692

MICROPROCESSOR-CONTROLLED FREQUENCY SYNTHESIZER

David Brewerton, Bracknell, and Peter P. R. Connell, Marlow, both of England, assignors to Racal-Dana Instruments Limited, Bracknell, England

Filed Feb. 21, 1980, Ser. No. 123,267

Claims priority, application United Kingdom, Mar. 6, 1979, 07795/79

Int. Cl.³ H03L 7/18, 7/20, 7/22

U.S. Cl. 331—2 7 Claims

1. An electrical circuit arrangement for producing a variable output frequency lying within a predetermined range and variable in frequency steps each of predetermined size, comprising

adjustable frequency generating means connected to produce the variable output frequency,

first reference means producing a first reference frequency variable stepwise,

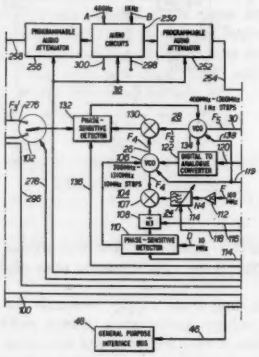
frequency combining means for algebraically combining the

variable output frequency with the first reference frequency so as to produce outputs corresponding to the sum and difference of the two frequencies,

frequency dividing means having a variable frequency division factor and connected to receive the sum and difference outputs,

second reference means producing a second reference frequency,

comparing means selectively operative to compare either the sum or the difference output, after division by the variable division factor, with the second reference frequency so as to produce a control signal dependent on the value of any error between the two frequencies compared,



means feeding the control signal to adjust the said variable frequency so as to reduce the error to zero, and

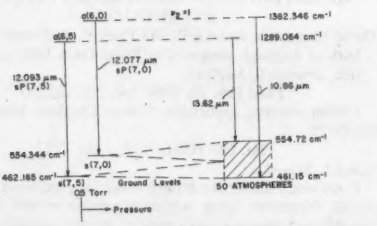
control means for rendering the comparing means responsive either to the sum or to the difference output, and for determining the value of the first reference frequency, in accordance with the position in the said predetermined range where the desired value of the output frequency lies and for adjusting the division factor by the minimum possible amount in order to change the value of the output frequency by one step of the predetermined size.

4,322,693

AMMONIA LASER WITH SIMULTANEOUS TRANSITIONS FROM SUBSTRATES OF DIFFERENT K-VALUES

Stephen M. Fry, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 22, 1977, Ser. No. 826,787
Int. Cl.³ H01S *3/094, 3/223*
U.S. Cl. 372—60 **5 Claims**



1. A laser comprising:

a housing;

a quantity of ammonia gas contained within said housing;

a carbon dioxide laser tuned to the R(30) transition of the 001–020 band for providing a pumping laser beam at a wavelength of approximately 9.2 μm and having a plurality of longitudinal modes and a plurality of transverse modes;

means for causing said pumping laser beam to irradiate said ammonia gas;

said pumping laser beam having sufficient power to simultaneously excite at least two a(6,K) energy substates of the $\nu_2=1$ (J,K) vibrational manifold of molecules of said ammonia gas to a condition of population inversion with respect to respective s(7,K) energy substates of the ground (J,K) vibrational manifold having the same K value as the associated a(6,K) substate, where K is an integer not greater than 5; and

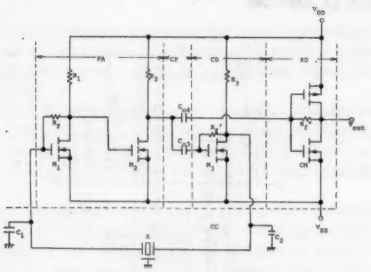
an optical resonator in optical communication with said ammonia gas for supporting simultaneous laser oscillation on the respective sP(7,K) transitions corresponding to said condition of population inversion.

4,322,694

CRYSTAL OSCILLATOR IMPLEMENTED WITH CMOS TECHNOLOGY

Mitsuo Morihisa, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 868,432, Jan. 10, 1978, abandoned, which is a division of Ser. No. 760,522, Jan. 19, 1977, Pat. No. 4,091,338. This application Jul. 16, 1979, Ser. No. 57,989
Claims priority, application Japan, Jan. 19, 1976, 51-5220; Mar. 18, 1976, 51-30041; Jul. 12, 1976, 51-83238
Int. Cl.³ H03B *5/36*
U.S. Cl. 331—116 FE **3 Claims**



1. A high impedance crystal oscillator comprising:

vibrating crystal means for creating a signal; and

a resistor load amplifier means for amplifying the signal created by said vibrating crystal means, said resistor load amplifier means including:

first and second bias voltage means, said first bias voltage means having a voltage different from said second bias voltage means;

first and second impedances, each having first and second terminals, the first terminal of each impedance being connected to said first bias voltage means;

a first semiconductor switch having a control terminal, an output terminal, and a third terminal, the control terminal of said first semiconductor switch receiving said signals created by said vibrating crystal means, the output terminal of said first semiconductor switch being connected to the second terminal of said first impedance, and the third terminal of said first semiconductor switch being connected to said second bias voltage means;

a second semiconductor switch having a control terminal, an output terminal, and a third terminal, the control terminal of said second semiconductor switch being connected to the output terminal of said first semiconductor switch, the output terminal of said second semiconductor switch being connected to the second termi-

nal of said second impedance, and the third terminal of said second semiconductor switch being connected to said second bias voltage means;

whereby the output of said second semiconductor switch is the output of said resistor load amplifier means and is used to excite said vibrating crystal means into vibration, said output of said resistor load amplifier means being of a constant frequency regulated by said vibrating crystal means;

a resistor load impedance converter means for reducing the output impedance of said resistor load amplifier means to more easily excite said vibrating crystal means, said resistor load impedance converter having an input connected to the output of said resistor load amplifier means and an output connected to said vibrating crystal means, said resistor load impedance converter including:

a third impedance having first and second terminals, the first terminal of said third impedance being connected to said first bias voltage means;

a third semiconductor switch having a control terminal, an output terminal, and a third terminal, the control terminal of said third semiconductor switch connected to the output terminal of said second semiconductor switch, the output terminal of said third semiconductor switch being connected to the second terminal of said third impedance and to said vibrating crystal means, the third terminal of said third semiconductor switch being connected to said second bias means; and

fourth impedance means for biasing said third semiconductor switch, said fourth impedance means being connected between the control and output terminals of said third semiconductor switch.

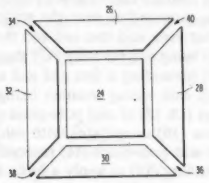
4,322,695
PLANAR TRANSMISSION LINE ATTENUATOR AND SWITCH

Paul L. Fleming, Rockville, and Thane Smith, Middletown, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Continuation-in-part of Ser. No. 904,966, May 11, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 107,111

Int. Cl.³ H01P *1/15*

U.S. Cl. 333—104 **5 Claims**



1. A beta element switching device comprising:

a semiconductor substrate having a planar surface,

five metallic conductors deposited on said planar surface and spaced to form uniform gaps therebetween, one of said metallic conductors having a generally square geometry and the other four of said metallic conductors having a generally trapezoidal geometry and being symmetrically arranged about said one of said metallic conductors, the gaps between adjacent ones of said conductors defining shunt current paths between the adjacent conductors through said semiconductor layer, said one of said metallic conductors forming an ohmic contact to said semiconductor layer while said other four of said metallic conductors forming Schottky barrier contacts to said semiconductor layer, adjacent ends of said other four of said metallic conductors defining input or output ports of r.f. transmission lines formed by said five metallic conductors,

means for applying an r.f. signal to at least one input port to cause said r.f. signal to propagate toward one of at least two output ports, and

bias means connected to each of said other four of said metallic conductors for selectively controlling the conductivity of said shunt current paths.

4,322,696
WEIGHTING VOLTAGE SUPPLY CIRCUIT FOR A TRANSVERSAL FILTER

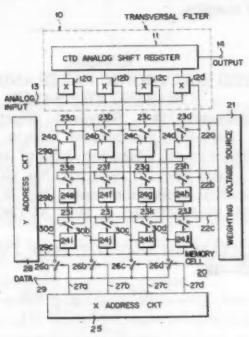
Tatsuo Sakaue; Tetsuya Iida, both of Yokohama, and Chikara Sato, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 5, 1980, Ser. No. 118,679

Claims priority, application Japan, Feb. 20, 1979, 54-17919

Int. Cl.³ H03H *15/02;* **G11C** *19/28, 27/02*

U.S. Cl. 333—165 **9 Claims**



1. In a transversal filter with multipliers each multiplying an applied signal with a weighting coefficient dependent on the magnitude of a weighting voltage, a circuit for applying weighting voltages to said multipliers comprising:

a plurality of electronic switches divided into groups of switches with each group of switches associated with a corresponding multiplier for controlling the magnitude of the weighting voltage applied to said corresponding multiplier;

a plurality of memory cells respectively associated with said electronic switches for storing digital data to turn on or off corresponding electronic switches; and

circuit means for supplying to said memory cells data to turn on or off said corresponding electronic switches.

4,322,697
SAMPLING FILTER FOR REDUCING ALIASING DISTORTION

Robert L. Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 8, 1980, Ser. No. 166,791

Int. Cl.³ H03H *19/00*

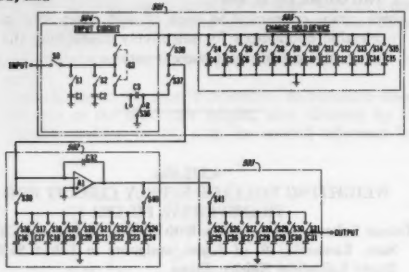
U.S. Cl. 333—173 **18 Claims**

1. A sampling filter for reducing aliasing distortion comprising:

sampling means for obtaining samples of an analog waveform at some predetermined sampling frequency f;

a plurality of storage means for storing a set of s samples on each of said storage means, wherein each of said sets of s samples is timewise displaced from the successive one of

said sets of s samples by a fraction x of the sampling period; and



summing means for combining a plurality of x said sets s of stored samples.

4,322,698

LAMINATED ELECTRONIC PARTS AND PROCESS FOR MAKING THE SAME

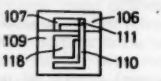
Tetsuo Takahashi, 248-5, Shiogoshi, Kisagata-cho 4-chome, Yurigun, Akita-ken, and Minoru Takaya, 13-2, Onitaka 3-chome, Ichikawa-shi, Chiba-ken, both of Japan

Filed Dec. 27, 1979, Ser. No. 107,742

Claims priority, application Japan, Dec. 28, 1978, 53-161221; Mar. 1, 1979, 54-22548; Oct. 2, 1979, 54-126359; Oct. 5, 1979, 54-127899

Int. Cl.³ H03H *3/00, 7/01;* H01F *27/40, 17/04*

U.S. Cl. 333—184 10 Claims



1. An electronic part including at least one inductor, which comprises a plurality of superposed electrically conductive segmental coil turns having interconnection portions and being partially separated from one another by interposed sheets of electrically insulating magnetic ferrite, said sheets formed to expose said interconnection portions so that said segmental coil turns are interconnected by said interconnection portions to form one or more coils, said coils being superposed on one another in a direction substantially normal to the surfaces of said insulating sheets and being terminated by sheets of electrically insulating magnetic ferrite at both ends of the part, said electronic part being finally formed by sintering said magnetic ferrite.

4,322,699

RADIATING CABLE

Helmut Hildebrand, Langenhagen, and Gerhard Dunker, Burgdorf, both of Fed. Rep. of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshütte, Hanover, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 22,227

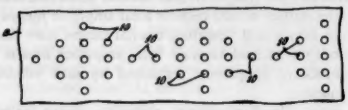
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812523

Int. Cl.³ H01P *3/06*

U.S. Cl. 333—237 1 Claim

1. A radiating coaxial cable, being comprised of an inner conductor, an outer conductor concentrically arranged about the inner conductor, and dieletric means between the conductors, the improvement comprising:

openings in the outer conductor, being of uniformly similar shape and size, and arranged at periodically variable density in axial direction in that said openings being arranged in axial rows and in circumferential rows, the axial spacing of the apertures in at least one axial row remaining uniform, the number of apertures in the circumferentially



extending rows vary periodically in axial direction so that the intensity of radiation, radially away from the cable, varies correspondingly periodically in axial direction.

4,322,700

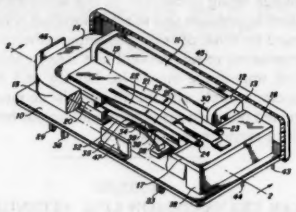
ELECTRICAL RELAY APPARATUS

Billy M. Everhart, Pataskala, and Harold E. McCullough, Blacklick, both of Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1979, Ser. No. 105,923

Int. Cl.³ H01H *50/26, 51/29*

U.S. Cl. 335—128 7 Claims



1. Electrical relay apparatus comprising a pole-piece (14), a winding (11) coupled to said pole-piece (14), armature means (16), a fixed first contact (28), a spring member (35) fixedly mounted at one end, and a second contact (38) mounted on one side of said spring member (35) opposite to and spaced apart from said first contact (28) characterized in that said second contact (38) is mounted at near the midpoint of said spring member (35) between said one end and the opposite end, said pole-piece (14) being substantially "U" shaped to present a pair of legs (13, 15) presenting a first end and a second end of said pole-piece (14), said spring member being arranged between said pair of legs (13, 15) of said pole-piece (14), and in that said armature means (16) cooperates with said first end and said second end of said pole-piece (14) responsive to the energization of said winding (11) to apply a force to said opposite end of said spring member (35) in a direction toward said one end to bow said spring member (35) and thereby move said second contact (38) into engagement with said first contact (28).

4,322,701

MAGNETIC CIRCUIT FOR MINIATURE RELAYS

Donald F. Drapeau, Windsor, Conn., assignor to Hi-G Incorporated, Windsor Locks, Conn.

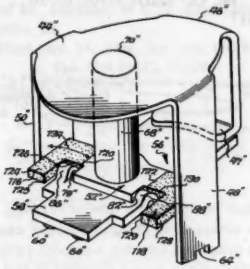
Filed Apr. 24, 1980, Ser. No. 143,454

Int. Cl.³ H01H *50/02, 50/16*

U.S. Cl. 335—202 16 Claims

1. An improved magnetic circuit for a miniature relay comprising a coil carried by a magnetic frame having a core portion terminating in a core face and a pole piece portion terminating in a pole face, and an armature having a portion spaced a small distance from said pole face defining an air gap therebetween when said coil is deenergized, said armature adapted for movement in response to energization of said coil to close said air gap, said armature having a portion adjacent said core face

thereby defining a useful, desired flux path through said core portion, said pole piece portion, said air gap between said pole face and said armature, said armature and said core face, said frame having another portion located sufficiently close to said



core face to define a fringing, undesired flux path through said other frame portion and core face tending to divert flux from said useful flux path, and a barrier in said fringing flux path of a material causing said fringing flux path to have sufficient reluctance to resist the flow of flux therethrough.

4,322,702

ELECTROMAGNETIC RELAY

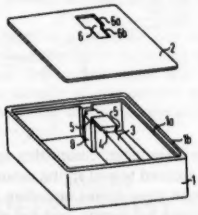
Werner Bosch, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 187,167

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 7929700[U]

Int. Cl.³ H01H *9/02, 13/04*

U.S. Cl. 335—202 **11 Claims**



1. An electromagnetic relay, comprising: a trough-shaped base body comprised of an insulating material, the base body serving as a carrier within which are positioned functional elements of the relay; said base body having a peripheral edge with an associated inner recess; a flat cover dimensioned to rest on the inner recess and thereby close the base body; and on the base body two holding lugs shaped which overlap an outer surface of the cover, a direction of overlap for one lug opposing the direction of overlap of the other lug.

4,322,703

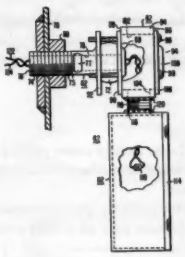
ELECTRICAL SWITCH AND ACTUATOR THEREFOR HAVING BOTH LINEAR AND ANGULAR ADJUSTMENT THEREBETWEEN

Leigh F. Jackson, Guilford, and Niles J. Martin, Bonneaville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 24, 1980, Ser. No. 171,788

Int. Cl.³ H01H *9/00*

U.S. Cl. 335—205 **8 Claims**



1. An electrical switch arrangement, including an elecrical switch and actuator means therefor, comprising:

a rod member having first and second ends, including a spherical ball portion at its first end, a threaded shank portion starting at its second end, and a longitudinal opening between its ends,

mounting means for threadably receiving the threaded shank portion of said rod member, permitting the selection of a desired linear position for said rod member, and including means for fixing the selected position,

a swivel base assembly including a housing portion defining a recess having at least first and second access openings,

said swivel base assembly further including an adjustable portion mounted for pivotal movement over the spherical surface of said ball portion, with the first access opening in its housing portion being in communication with the longitudinal opening in said rod member, with said adjustable portion including means for fixing the selected angular position of said swivel assembly on said ball portion,

a switch box having at least one opening therein, said switch box being fixed to said swivel base assembly with its at least one opening in communication with the second access opening in said housing portion,

an electrical switch disposed in said switch box,

electrical wires communicating with said electrical switch via the longitudinal opening in said rod member and the housing portion of said swivel base assembly,

and actuator means for said electrical switch,

said mounting means and said actuator means being disposed for relative movement therebetween, with said electrical switch being actuated in response to a predetermined positional relationship relative to said actuator means.

4,322,704

ELECTRIC FUSE, PARTICULARLY FOR USE IN CONNECTION WITH SOLID STATE DEVICES

Frederick J. Kozacka, S. Hampton, N.H., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 27, 1980, Ser. No. 200,687

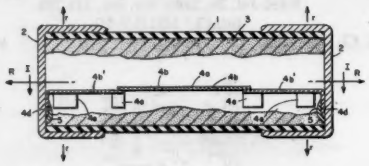
Int. Cl.³ H01H *85/04*

U.S. Cl. 337—159 **5 Claims**

1. An electric fuse, particularly for use in connection with solid state devices, including a tubular casing of electric insulating material, a pair of terminal elements closing said casing at the ends thereof, a granular arc-quenching filler inside said casing, a fusible element immersed in said granular arc-quench-

ing filler and conductively interconnecting said pair of terminal elements wherein

(a) said fusible element comprises an axially inner substantially planar portion of silver having at least one short circuit neck adapted to initiate circuit interruption when said neck reaches approximately the fusing temperature of silver;



(b) a pair of non-planar axially outer portions of copper each having a larger width and a larger surface than said axially inner portion; and

(c) conductive connections interconnecting said axially inner portion and said pair of axially outer portions.

4,322,705

THERMAL CUTOUT FUSE

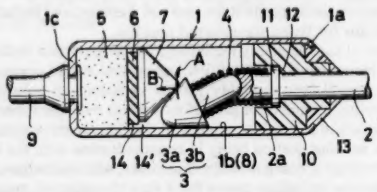
Kunio Hara, Kawasaki, Japan, assignor to Nifco Inc., Kanagawa, Japan

Filed Sep. 22, 1980, Ser. No. 189,264

Claims priority, application Japan, Sep. 26, 1979, 54-122536

Int. Cl.³ H01H *37/76*

U.S. Cl. 337—407 **7 Claims**



1. A thermal cutout fuse, comprising:

a housing,

a first lead wire penetrating into said housing,

a movable contact connected to said first lead wire within said housing and adapted to be turned aslant in the radial direction within the housing,

resilient means for biasing said movable contact constantly in a first direction, said resilient means being constructed so as to be capable of flexing in a second direction while supporting said movable contact,

a stationary contact encircling said movable contact,

a second lead wire connected to said stationary contact and extending out of said housing,

a thermally-sensitive pellet having first and second states according to the temperature acting on it disposed inside the housing at a location spaced from said movable contact, and an insulating means constructed to control said movable contact in a first manner in which said resilient means is flexed in said second direction when said pellet is in one of said states and in a second manner in which said resilient means is not flexed in said direction when said pellet is in the other of said states so that said movable contact is in contact with said stationary contact when said pellet is in one of said states and is not in contact with said stationary contact when said pellet is in the other said states, said pellet being constructed so the one of said first and second states of said pellet is a solid state and the other of said states is a fluid state.

4,322,706

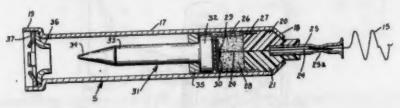
PISTON ACTUATED STRIKER FOR ELECTRIC FUSE

Robert N. Thrash, Tucker, Ga., assignor to Kearney-National, Inc., Atlanta, Ga.

Filed Dec. 15, 1980, Ser. No. 216,288

Int. Cl.³ H01H *37/02, 85/30*

U.S. Cl. 337—417 **18 Claims**



1. A fuse striker comprising a tubular housing, at least two mating sections arranged in snug contacting complementary relation to each other and forming a closure structure for one end of said housing, piston means disposed in said housing and normally cooperating with said closure structure to form a substantially fluid tight enclosure, a striker pin disposed within said housing and arranged to move toward the other end thereof in coordination with operating movement of said piston, pyrotechnic material disposed within said enclosure, an elongated ignition element embedded in said pyrotechnic material and interposed between contacting surfaces of said mating sections, and means for activating said ignition element.

4,322,707

STRAIN GAGE TRANSDUCER WITH A FOIL STRAIN GAGE ARRANGEMENT SECURED TO A SPRING

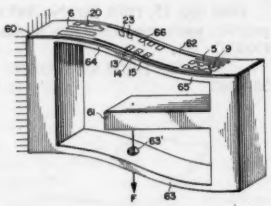
Werner Ort, Darmstadt, Fed. Rep. of Germany, assignor to Hottinger Baldwin Measurements, Inc., Framingham, Mass.

Filed Apr. 4, 1980, Ser. No. 139,159

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916427

Int. Cl.³ G01L *1/22*

U.S. Cl. 338—2 **10 Claims**

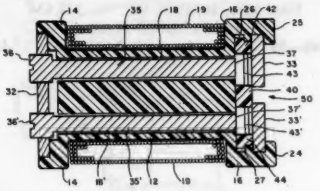


1. A strain gage transducer, comprising spring means, foil means operatively secured to said spring means, said foil means comprising foil strain gage means including contact terminal means etched into said foil means, said foil strain gage means comprising strain gage elements and a plurality of different conductor configurations also etched into said foil means for operatively interconnecting said strain gage elements by said different conductor configurations, said foil means further comprising interruptable electrically conducting short circuit sections also etched into said foil means and operatively interconnecting said conductor configurations, each of said short circuit sections being arranged for initially short circuiting a respective one of said plurality of different conductor configurations.

4,322,708
ELECTROMAGNETIC DEVICE UTILIZING A PAIR OF MAGNETICALLY ACTIVATED ELECTRONIC SWITCHES

Kenneth H. Oehrig, Plainfield, and Frank J. Petkewicz, Chicago, both of Ill., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Oct. 14, 1980, Ser. No. 196,943
Int. Cl.³ H01L *43/04*
U.S. Cl. 338—32 H **18 Claims**



1. An electromagnetic device arranged to produce a first and a second output signal responsive to an electrical current, said device comprising:

a magnetic flux generator including a tubular body portion and first and second axially spaced flanges extending perpendicularly from said body portion at opposite ends thereof, a pair of openings spaced equidistant and parallel to each other running through said body portion and each of said flanges and a coil of insulated wire wound about said body portion intermediate said flanges, said coil connected to said electrical current generating a field of magnetic flux;

a magnetic circuit including a pair of cores, each core slidably situated within a respective one of said bobbin openings and each core including a first end extending outward of said first flange and a second end proximate said second flange, a flux return path disposed adjacent said coil and including a first end portion mounted to said first flange and a second end portion arranged adjacent to and in spaced relationship with each one of said cores second end forming first and second air gaps therebetween, said flux return path further including adjusting means engaging each core first end to said flux return path first end portion and each core manually adjustable thereat, sliding each of said cores within a respective opening and providing a magnetic flux density of a first specific value within said first air gap and a magnetic flux density of a second specific value within said second air gap; and

a pair of magnetic switching devices each mounted within a different one of said air gaps adjacent a respective core second end;

whereby, in response to a magnetic flux density of said first specific value said respective switching device is operated producing said first output signal and in response to a magnetic flux density of said second specific value said respective switching device is operated producing said second output signal.

4,322,709
ADJUSTABLE FLUX GENERATOR A MAGNETICALLY ACTIVATED ELECTRONIC SWITCH

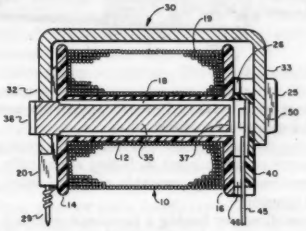
David L. Vonder, Addison, and Frank J. Petkewicz, Chicago, both of Ill., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Oct. 14, 1980, Ser. No. 196,952
Int. Cl.³ H01L *43/04*
U.S. Cl. 338—32 H **14 Claims**

1. An electromagnetic device arranged to produce an output signal responsive to an electrical current, said device comprising:

a magnetic flux generator including a tubular body portion and first and second axially spaced flanges extending perpendicularly from said body portion at opposite ends thereof, an opening running through said body portion and each of said flanges, and a coil of insulated wire wound about said body portion intermediate said flanges, said coil connected to said electrical current generating a field of magnetic flux;

a magnetic circuit including a slidable core situated within said opening and including a first end extending outward of said first flange and a second end proximate said second flange, a flux return path disposed adjacent said coil and including a first end portion mounted to said first flange and a second end portion arranged adjacent to and in



spaced relationship with said core second end forming an air gap therebetween, said flux return path further including adjusting means engaging said core first end to said flux return path first end portion and manually adjustable thereat, sliding said core within said opening and providing a magnetic flux density of a specific value within said air gap; and

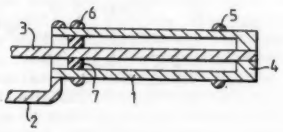
a magnetic switching device mounted within said air gap adjacent said core second end;

whereby, in response to a magnetic flux density of said specific value said switching device is operated producing said output signal.

4,322,710
ELECTRICAL RESISTORS

Richard G. Carson, Edinburgh; Frank B. McCall, Balerno, and Alistair J. Stanley, Aberlady, all of Scotland, assignors to Ferranti Limited, Gatley, England

Filed Aug. 1, 1980, Ser. No. 174,661
Claims priority, application United Kingdom, Aug. 2, 1979, 26895/79
Int. Cl.³ H01C *3/02*
U.S. Cl. 338—61 **6 Claims**

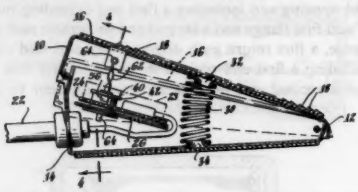


1. An electrical resistor which includes a self-supporting hollow cylinder of electrically resistive material having one end closed, a first electrical connection to the open end of the cylinder, a second electrical connection in the form of a conductor passing through the open end of the cylinder and connected to the closed end thereof, and a pair of spaced voltage-measuring connections located on the outer surface of the cylinder.

4,322,711
FOOT PEDAL MOTOR CONTROL

Paul C. Spangler, and Searle T. Spangler, both of Westport, Conn., assignors to Blackstone Industries, Inc., Bethel, Conn.

Filed Dec. 19, 1980, Ser. No. 218,310
Int. Cl.³ H01C 10/00
U.S. Cl. 338—153 7 Claims

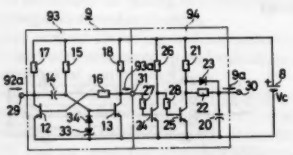


1. A foot pedal operated motor control for controlling the speed of a motor comprising:
- a housing having a motor control circuit mounted therein,
- said motor control circuit including a generally disc shaped potentiometer with rotatable and stationary members in said housing,
- said potentiometer having a resistance which is determined by the position of said rotatable member with respect to said stationary member,
- said disc shaped potentiometer having an opening therethrough,
- a foot pedal pivotally mounted on said housing overlying said potentiometer,
- a helical member extending between said foot pedal on one end thereof and into said opening of said disc shaped potentiometer on the other end thereof,
- said foot pedal on being depressed moving said helical element in a linear direction and turning said movable member with respect to said stationary member of said disc shaped potentiometer thereby varying the resistance of said potentiometer and controlling the current in said motor control circuit in accordance with the movement of said foot pedal.

4,322,712
ELEVATOR SPEED DETECTING APPARATUS

Masayuki Yoshida, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Aichi, Japan

Filed Oct. 30, 1979, Ser. No. 89,666
Claims priority, application Japan, Nov. 1, 1978, 53-150715[U]
Int. Cl.³ B66B 3/00; G08B 21/00
U.S. Cl. 340—19 R 13 Claims

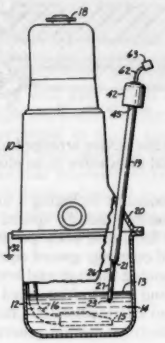


1. An apparatus for detecting the speed of an elevator comprising:
- means for generating a pulse train in response to a speed of an elevator cage;
- a monostable multivibrator having an input connected to said pulse generating means for producing a pulse output signal in response to said pulse train; and
- a smoothing circuit having an input connected to said multivibrator for producing a smoothed signal in response to said pulse output signal, said multivibrator including means for controlling a pulse width of said pulse output signal for rendering said pulse width narrower with an increasing power source voltage and wider with a decreasing power source voltage.

4,322,713
LEVEL MONITORING METHODS AND APPARATUS PARTICULARLY FOR HIGH-RESISTIVITY LIQUIDS

Sherman W. Duck, 332 C St., Redwood City, Calif. 94063, and Rino Ammenti, 5 Bertocchi La., Millbrae, Calif. 94030

Filed Mar. 10, 1980, Ser. No. 128,434
Int. Cl.³ G08B 21/00
U.S. Cl. 340—59 42 Claims



1. In a method of monitoring the level of an electrically conductive liquid in a container, the improvement comprising in combination the steps of:
- providing an elongate electric conductor with a length, relative to a point of reference, greater than the distance between said point of reference and a predetermined low level of said liquid;
- electrically insulating said elongate conductor by providing said elongate conductor with electric insulation for a length which, relative to said point of reference, is greater than said distance;
- cutting said conductor and said electric insulation at said predetermined low liquid level to diminish the length of said insulated conductor with respect to said point of reference to a length equal to said distance and providing said conductor at a position corresponding to said predetermined low level relative to said point of reference with an end free of electric insulation;
- inserting said insulated conductor of diminished length into said container to position said free end at the location of said predetermined low level; and
- electrically monitoring the level of said liquid with said inserted insulated conductor exposed to said electrically conductive liquid at said free end.

4,322,714
VEHICLE ANTI-THEFT ALARM

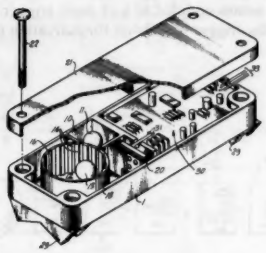
Curtis Morgan, Sunset Beach, Calif., assignor to Martek Products, Inc., Santa Ana, Calif.

Filed Nov. 17, 1980, Ser. No. 207,458
Int. Cl.³ B60R 25/10; G08B 13/02
U.S. Cl. 340—65 7 Claims

1. An alarm system for a movable object and responsive to its acceleration, comprising:
- a housing with means to attach it to said object;
- a first cavity in said housing, and having walls and a striker of hard material, free to move inside said cavity to produce impacts on the wall thereof in response to accelera-

tion of said housing, said impacts generating high-frequency sound and vibration inside said housing;

a transducer in said housing disposed so as to sense said sound or vibration and having electrical output terminals connected to the input of an amplifier; and



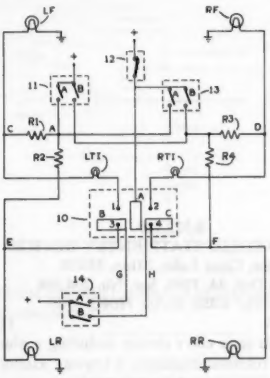
control circuitry comprising signal-processing and relay circuits fed from the output of said amplifier and having output terminals connected so as to actuate an alarm in response to said impacts.

4,322,715

AUTOMOTIVE LIGHT CIRCUIT

Charles G. Moon, 4325 Whitney Way, Erie, Pa. 16511

Filed Jun. 5, 1980, Ser. No. 156,669
Int. Cl.³ B60Q *1/26*
U.S. Cl. 340—81 R **2 Claims**



1. In combination, a signal light circuit comprising,

a first front lamp means,

a second front lamp means,

a first rear lamp means,

a second rear lamp means,

a source of voltage,

a parking switch having two movable terminals connected to said source of voltage, and a first fixed terminal and a second fixed terminal,

a turn signal switch having,

a first fixed terminal, and

a second fixed terminal,

a flasher unit having one terminal connected to said source of voltage, and a second terminal,

four-way flasher switch having a first fixed terminal and a second fixed terminal and two movable terminals connected to the second terminal of said flasher unit and to a movable terminal on a turn signal switch,

a first resistor means,

a second resistor means,

said first resistor means having a first end connected to said first fixed terminal on said parking switch and to said first fixed terminal on said four-way flasher switch,

said first resistor means having a second end connected to said first front lamp means and to a first fixed terminal on said turn signal switch and to said first rear lamp means,

said second resistor means havng a first end connected to said second fixed terminal on said parking switch and to said second fixed terminal on said four-way flasher switch,

said second resistor means having a second end connected to said second front light and to a second fixed terminal on said turn signal switch and to said second rear lamp means,

said movable terminal on said turn signal switch being adapted to connect said flasher unit selectively to said first fixed terminal on said turn signal switch or to said second fixed terminal on said turn signal switch,

said first resistor means comprises a first resistor member and second resistor member connected together at their first end, and to said first fixed terminal on said parking switch,

said first resistor member being connected to said first front lamp, and said second resistor member having its second end connected to said first rear lamp,

and said second resistor means comprising,

a third resistor member and a fourth resistor member having a first end connected together, and to said second fixed terminal on said four-way flasher switch,

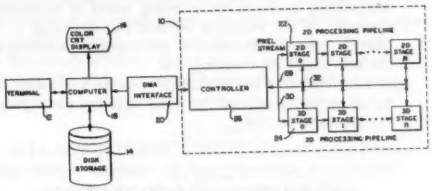
said second end of said third resistor member being connected to said right front light and said fourth resistor member having its second end connected to said second light.

4,322,716

METHOD AND APPARATUS FOR PATTERN RECOGNITION AND DETECTION

Stanley R. Sternberg, Ann Arbor, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 742,127, Nov. 15, 1976, Pat. No. 4,167,728, and Ser. No. 919,171, Jun. 26, 1978, Pat. No. 4,174,514, which is a continuation-in-part of Ser. No. 742,127,.
This application Sep. 10, 1979, Ser. No. 73,818
Int. Cl.³ G06K *9/00*; G06F *15/20*
U.S. Cl. 340—146.3 MA **13 Claims**



1. A system for analyzing images wherein each image is made up of a matrix of points, said image being represented by a serial stream of digital data signals in which each signal has a value that is a function of particular characteristics of an associated point in the image, said system comprising:

a first chain of substantially identical neighborhood transformation stages for analyzing images represented by multivalued digital data signals having a range of values from zero to a number greater than one, each of said stages being operative to transform the digital signal for each image point into a new value as a function of the maximum signal value in a neighborhood of points in the image matrix;

a second chain of substantially identical neighborhood transformation stages for analyzing images represented by binary valued digital data signals having values of zero or one, each of said stages being operative to transform the

digital signal for each image point into a new value as a function of the configuration of its neighboring points in the image matrix having given values; and

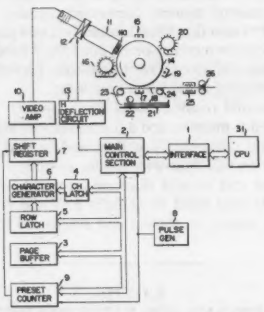
central controller means communicating with both chains of stages for selectively routing the digital signals to one of the chains depending upon the type of transformation desired to be performed.

4,322,717

RECORDING CHARACTER CONFIGURATION CHANGING SYSTEM

Kazuhiko Iida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 12, 1979, Ser. No. 74,894
Claims priority, application Japan, Sep. 18, 1978, 53-114425
Int. Cl.³ H04N *1/00*; G03G *15/00*
U.S. Cl. 340—146.3 AH **12 Claims**



1. A recording character configuration changing system adaptable for use with and electrostatic or an electrophotographic recording system in which a character generator generates dot signals defining characters to be recorded, and an exposure section which forms a line of dot signal characters by repeated horizontal scannings, and the recording of characters corresponding to the dot signals on a recording medium moving at a constant speed, comprising:

means for changing the vertical dimension of a character by maintaining constant the scanning speed of an exposure scanning of the exposure section but changing a time interval between the starts of one exposure scanning and the next exposure scanning; and

means for changing the horizontal dimension of a character by an exposure interval between adjacent dot signals in the exposure section.

4,322,718

SOUND-ACTIVATED ROTARY DEVICE

Paul Faierstain, 3807 Sunset La., Northbrook, Ill. 60062

Filed May 19, 1980, Ser. No. 151,315
Int. Cl.³ G08B *3/10*
U.S. Cl. 367—197 **10 Claims**

1. A device which is adapted for rotary operation and includes:

power supply;

electrical motor means connected to said power supply;

rotary load means opeatively associated with the electrical motor means, said electrical motor means and power supply means coupled to sound activated circuit means and said sound activated circuit means comprising:

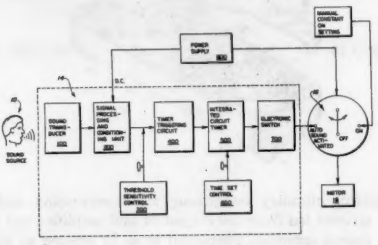
a sound transducer for receiving a sound and converting the same to an audio frequency signal;

signal processing and conditioning means for processing and conditioning said audio frequency signal from said audio transducer;

threshold audio sensitivity control means operatively associated with said signal processing and conditioning means for establishing a threshold above which a signal will pass from said processing and conditioning;

timer triggering circuit means coupled to said signal processing and conditioning means for receiving the processed signal having a value greater than the threshold value and for generating a timer trigger signal;

timer circuit means coupled to said timer trigger circuit for receiving the trigger signal and for activation in response thereto;



time set control means associated with said timer circuit for setting the time duration of operation of said timer circuit; and

electronic switch means associated with said timer circuit for receiving an operational control signal for connection with said motor means to operate in response to said timer circuit signal whereby said motor means and rotary load are caused to operate.

4,322,719

CODED SOLID STATE ENTRY DEVICE

John H. Moorhouse, Clear Lake, Minn. 55319

Filed Oct. 24, 1980, Ser. No. 200,394
Int. Cl.³ E05B *49/00*; H04Q *3/00*
U.S. Cl. 235—382 **11 Claims**

7. A coded solid state entry device including a plurality of normally latched rotatable tumblers, a keyway axially of said tumblers, code indicia carried by said tumblers, code reading means in connectioon with said tumblers and coupled to a comparator means including a multiplicity of coded circuits, said comparator means matching said code indicia with a corresponding coded circuit and a coded key operating said tumblers, the improvement herein consisting of

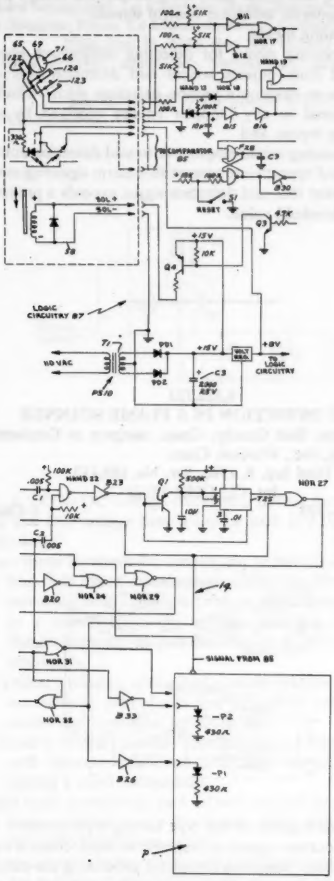
a first switch means including signal means indicating said key being inserted into said keyway, a timer setting an operating time period and means unlatching said tumblers,

a second switch means supplementing said first switch means to continue the indication of a key insertion into said keyway,

a third switch means including means extending said time period, means energizing said code reading and comparator means, a visual signal means indicating that said code has compared and matched to a corresponding code circuit and means allowing access to said matched corresponding coded circuit,

said coded key being arranged and constructed to engage

said switches in successive operating positions and to rotate said tumblers to a code reading position, and



means latching said tumblers at the expiration of said operating time period.

4,322,720

DISPLAY DEVICES

Gordon Hughes, deceased, late of Macclesfield, England (by Margaret Hughes, Mabel Mottershead, legal representative), assignor to International Computers Limited, London, England

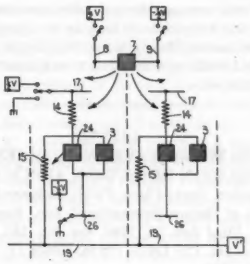
Filed Jan. 23, 1979, Ser. No. 5,916

Claims priority, application United Kingdom, Jan. 28, 1978, 3574/78

Int. Cl.³ G08B *5/36*

U.S. Cl. 340—825.81 **9 Claims**

1. A display arrangement comprising a first radiative element, a first photoconductive element radiatively coupled to the first radiative element, a second radiative element, a second photoconductive element radiatively coupled to the second radiative element, the first photoconductive element being coupled between a first electrode of the second radiative element and a first selection line and a second electrode of the second radiative element being coupled to a second selection line, the second photoconductive element being coupled to the said first electrode of the second radiative element, means for applying a pulse of energisation potential to the first radiative element whereby it produces a pulse of radiation and lowers the resistance of the first photoconductive element, means for applying a partial energisation pulse to the first selection line and means for applying a partial energisation pulse to the second selection line whereby there is applied across the series combination of the first photoconductive element and the second radiative element an energisation potential sufficient to initiate the production of radiation by the second radiative element when the resistance of the first photoconductive element is lowered by the said pulse of radiation but insufficient when that resistance is not so lowered, the resistance of the second photoconductive element being lowered by the said radiation produced by the second radiative element, means for applying an energisation potential across the series combination of the second photoconductive element and second radiative element of a magnitude sufficient to maintain production of radiation from the second radiative element when the resistance of the second photoconductive element has been lowered by the said radiation produced by the second radiative element but insufficient when that resistance is not so lowered, and means for connecting the said first selection line, at a time when production of radiation by the second radiative element is being maintained, to a potential different from that obtained during initiation of production of radiation by the second radiative element whereby a said pulse of radiation from the first radiative element reduces the resistance of the first photoconductive element and thereby alters the potential of the said first electrode of the second radiative element in such a manner that the energisation potential applied between the said first and second electrodes is reduced to the point at which production of radiation by the second radiative element ceases.



4,322,721

SELF-MONITORING WARNING INSTALLATION

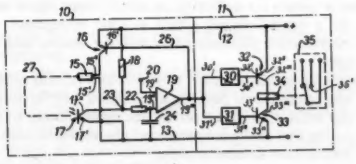
Benno Perren, Austrasse 33, 5430 Wettingen, Switzerland

Filed Jul. 11, 1980, Ser. No. 167,478

Claims priority, application Switzerland, Aug. 15, 1979, 7473/79

Int. Cl.³ G08B *13/18, 17/06, 19/00*

U.S. Cl. 340—521 **13 Claims**



1. A self-monitoring alarm installation, comprising:
a monitoring circuit;

an alarm circuit operatively connected with said monitoring circuit;

said monitoring circuit being structured as a free-running opto-electronic oscillator;

said monitoring circuit comprising:

a light-emitting diode constituting a transmitter;

a flexible optical conductor constituting a conductor; and

a photodiode serving as a receiver for an oscillating monitoring signal;

said alarm circuit comprising:

at least one monostable multivibrator having a signal input;

said signal input being connected with said monitoring circuit;

said monostable multivibrator being switched by said monitoring signal into an unstable switching state;

said monitoring signal having an oscillation frequency greater than the flop frequency of the monostable multivibrator,

so that said monostable multivibrator remains in its unstable switching state as long as its signal input has infed thereto an oscillating monitoring signal and flops into its stable switching state as soon as the monitoring signal is interrupted.

4,322,722

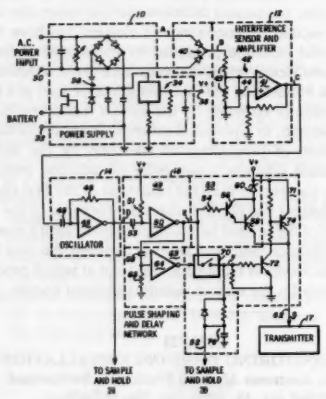
PULSED MICROWAVE MOTION SENSOR FOR INTRUSION DETECTION APPLICATIONS

Peter J. Kozdon, Santa Clara, Calif., assignor to DTI Security, a Division of Datura International, Inc., Sunnyvale, Calif.

Filed Jun. 20, 1980, Ser. No. 161,279

Int. Cl.³ G01S 13/56; G08B 13/18

U.S. Cl. 340—554 **10 Claims**



1. A microwave intrusion alarm apparatus for energizing an alarm when motion is sensed within a detection area comprising:

transmitter means for transmitting microwave energy into a detection area;

sensor means for detecting an interference signal and generate a timing signal which is time coincident with said interference phenomenon occuring within said detection area;

oscillator means coupled to the output of said sensor means and operative to develop a simulated interference signal in the event that said interference signal ceases to exist indicating that said predetermined phenomenon ceases to exist within said detection area;

signal generating means responsive to said interference signal and said simulated interference signal and operative to generate a train of pulses for periodically energizing said transmitter means and causing it to transmit bursts of microwave energy into said detection area, said burst of energy being time coincident with said interference phenomenon, said signal generating means also being operative to generate detection control signals;

alarm signaling means;

energy receiving means for detecting microwave energy reflected from objects within said detection area and operative to develop a motion detection signal which is proportional to any Doppler energy received by said receiving means; and

signal processing means responsive to said detection control signals and operative to actuate said alarm signaling means in the event that said detection signal exceeds a predetermined threshold value.

4,322,723

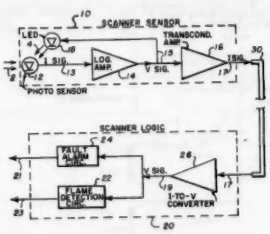
FAULT DETECTION IN A FLAME SCANNER

Paul H. Chase, East Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 8, 1980, Ser. No. 185,113

Int. Cl.³ G08B 17/12

U.S. Cl. 340—578 **6 Claims**



1. In a flame scanner of the type having a photosensor for producing a current signal in response to light emitted by a flame, and a flame detection circuit for processing the current signal produced by said photosensor so as to determine if a stable flame is present, a fault detection apparatus for detecting the presence of a fault in the flame scanner, said fault detection apparatus comprising:

a. a logarithmic amplifier for receiving as its input the current signal produced by said photosensor and for producing as its output a voltage signal which represents a logarithmic characterization of the current signal received from said photosensor;

b. light producing means for receiving as its input the voltage signal output of said logarithmic amplifier and emitting light in response thereto, the intensity of the emitted light being directly proportional to the amplitude of the received voltage signal, said light producing means being disposed so that the emitted light strikes said photosensor;

c. a fault alarm circuit disposed in parallel with said flame detection circuit, said fault alarm circuit receiving as its input the voltage signal output of said logarithmic amplifier and producing as its output an alarm signal whenever the amplitude of the received voltage signal falls below a preselected minimum level or rises above a preselected maximum level; and

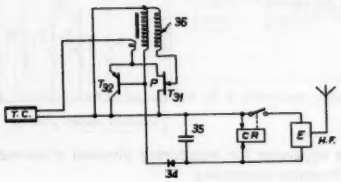
d. means for transmitting the voltage signal output of said logarithmic amplifier to said fault alarm circuit.

4,322,724

LOW VOLTAGE OPERATED ELECTRIC CIRCUITS

Richard Grudzinski, La Chaux-de-Fonds, Switzerland, assignor to Jocelyne Payot, La Chaux-de-Fonds, Switzerland

Filed Jun. 25, 1980, Ser. No. 163,013
Claims priority, application Switzerland, Jun. 29, 1979, 6106/79
Int. Cl.³ G08B 17/06; H02M 3/335
U.S. Cl. 340—595 19 Claims



1. A DC to DC voltage converting device for enhancing a very low DC voltage from a source such as a thermocouple, comprising:

two input terminals for connection to said DC source,

a first, field effect, transistor means having the property of providing substantial source-drain conduction in response to a substantially zero voltage across a control path thereof between its gate and one of its source and drain electrodes,

a primary winding connected in series relationship with the source-drain path of said first field effect transistor means across said two input terminals,

at least a second transistor means defining a main conducting path between two main electrodes thereof and further having a control electrode,

said main conducting path of said second transistor means being coupled across the source-drain path of said first field effect transistor means,

a secondary winding cooperating with said primary winding for defining therewith a transformer having a high turns ratio of the secondary winding relative to the primary winding,

said control path of said first field effect transistor means being coupled across at least a portion of said secondary winding, so that oscillations are initiated due to said source-drain conduction in response to a substantially zero voltage across said control path of said field effect transistor means,

means for coupling said oscillations between said control electrode of said second transistor means and one main electrode of said second transistor means, and

a DC output circuit having a rectifying means and coupled between one end of said secondary winding and the control electrode of said second transistor means.

7. A self-contained detector-transmitter fire alarm unit comprising:

fire sensing means adapted to deliver a very low and intermittent DC voltage upon fire condition,

a DC to DC enhancing voltage converter coupled to said fire sensing means and adapted to deliver at its output upon a fire condition a DC supply voltage suitable for operating radio transmitter circuitry, and

a radio transmitter circuit connected across the output of said DC to DC enhancing voltage converter.

4,322,725

TEMPERATURE MEASUREMENT SYSTEM

Michael J. Annetts, Edinburgh, Scotland, assignor to Coal Industry (Patents) Limited, London, England

Continuation of Ser. No. 926,169, Jul. 19, 1978, abandoned. This application Jun. 27, 1980, Ser. No. 163,860
Claims priority, application United Kingdom, Jul. 27, 1977, 31526/77
Int. Cl.³ G01K 7/30; G08B 17/06
U.S. Cl. 340—595 11 Claims

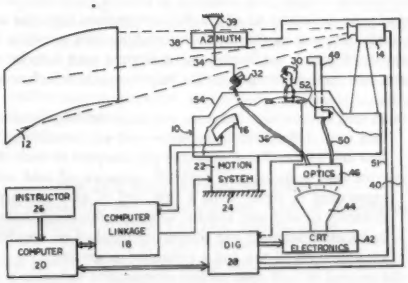
1. A fire detection system comprising an electric thermal transducer arranged to be placed in a turbulent gas stream and to produce a first signal having an AC component which is due to temperature variations in the gas stream, the AC component having a variable frequency of up to a few hundred Hz, and having a DC component, which is due to mean temperature of the gas stream, a discriminator which separates the AC component from the DC component, to produce a second signal which is related to dynamic temperature state of the gas stream and a processing unit, to which the AC component from the discriminator is fed and which is programmed to produce an output proportional to a time average of the square of the AC component, the output being related to the temperature of a remote heat source upstream of the transducer, and the output showing an increase with added energy from the heat source or fire upstream of the transducer.

4,322,726

APPARATUS FOR PROVIDING A SIMULATED VIEW TO HAND HELD BINOCULARS

Albert F. Collier, Westmoreland, and David L. Peters, Whitney Point, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,066
Int. Cl.³ G09G 1/06; G09B 9/04
U.S. Cl. 340—705 12 Claims



1. Apparatus for providing selected visual scenes to an observer comprising:

a first eye piece and a further eye piece for viewing said selected visual scenes by said observer, said first eye piece and said further eye piece being suitable for orienting in a selected direction;

source means for generating electric signals representative of said selected visual scenes;

display means for receiving and converting said electrical signals into a visual representation of said selected visual scenes;

optical transporting means for receiving said visual repre-

sentation from said display means and transporting said visual representation to said first eye piece and to said further eye piece for viewing by said observer; and

means for connecting said transporting means and said first eye piece and said further eye piece to provide said selected visual scenes to both said first and further eye pieces.

4,322,727

INDUCTIVE TRANSDUCER RESPONSIVE TO DISPLACEMENT ALONG A PATH

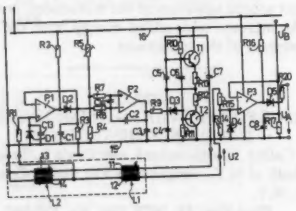
Erich Zabler, Karlsruhe, and Konrad Wolf, Walzbachtal, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 31, 1980, Ser. No. 202,636

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2944472

Int. Cl.³ G08C *19/08*

U.S. Cl. 340—870.35 **4 Claims**



1. Inductive transducer apparatus suitable for indicating the displacement of the fuel injection control rod in an internal combustion engine and utilizing a semi-differential variable inductance including an adjustable comparison inductor and a variable inductor having a short-circuiting ring movable by a member of which the displacement along a path is to be measured, and further comprising the improvement which consists in that:

both said comparison inductor and said variable inductor of said semi-differential inductance unit are constituted of a first and a second coil magnetically coupled to each other;

one of said coils of said variable inductor of said unit is connected in series with a first coil of said comparison inductor of said unit and the series combination thereof is connected between the output terminal of an amplitude-regulated oscillator and a reference potential;

the second of said coils of said comparison inductor is connected to supply a signal to a first rectifying circuit (G1) that provides an amplitude regulating magnitude to said oscillator (Os); and the second of said coils of said variable inductor of said unit is connected in series with the second of said coils of said comparison inductor to provide, in a polarity opposite to the polarity of the first of said coils of said variable inductor, a signal to a second rectifying circuit (G2), the output of which furnishes an output electrical signal representative of the ratio of the difference (L1−L2) betwen the inductances of said variable and comparison inductors to the inductance of said comparison inductor (L2).

4,322,728

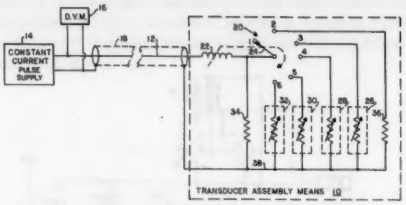
MULTICHANNEL REMOTE TRANSDUCER MONITORING SYSTEM

Warren G. Ginn, Del Mar, Calif., assignor to Systems, Science and Software, La Jolla, Calif.

Filed Dec. 6, 1979, Ser. No. 100,938

Int. Cl.³ G08C *19/04, 19/32*

U.S. Cl. 340—870.38 **3 Claims**



1. An apparatus for monitoring physical phenomena at a remote location comprising:

a transducer assembly means including at least two transducer elements, each element varying in resistance as a measurement of change in the physical phenomenon being monitored by said element, a stepper switch having a plurality of contacts and a swinger arm movable along said contacts in a predetermined sequence, each said transducer element coupled to a respective one of said contacts;

a single conductor cable means;

means for periodically impressing a current pulse of fixed magnitude on said cable means;

means for coupling said current pulse from said cable means to said swinger arm;

means responsive to the termination of each said current pulse for moving the swinger arm of said stepper switch to the next contact in said sequence; and

means for measuring the voltage generated by said current pulse and for indicating said measured voltage,

said transducer assembly means further comprising a fixed calibrate resistor element coupled to one of said contacts on said stepper switch and a fixed comparator resistor coupled to said swinger arm such that said comparator resistor is in parallel with each element connected to a respective contact of such stepper switch.

4,322,729

INTERROGATOR-RESPONSOR SYSTEM FOR SECONDARY RADAR DEVICES

Peter Honold, Munich, and Gerhard Wagner, Schaftlach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 7, 1970, Ser. No. 95,887

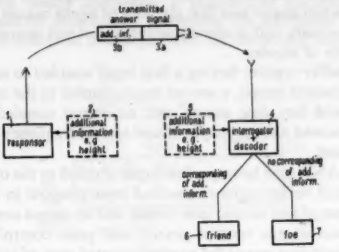
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1969, 1961914

Int. Cl.³ G01S *13/78*

U.S. Cl. 343—6.5 R **15 Claims**

1. The method for friend-foe recognition in an interrogator-responsor system for secondary radar devices in which the answering signals which arrive upon interrogation are investigated as to whether they have been coded in a definite manner and deviating from the expected coding are identified as signals coming from a foe-responsor device, comprising the steps of forming information having unique individual content having value only for a respective responsor device; providing the information to the interrogator device; forming an answering signal and transmitting same from the responsor device; adding the information to the answering signal; and comparing in the

interrogator device the information with the corresponding information portion of the answering signals whereby corresponding information is indicative of a friend-responsor device.

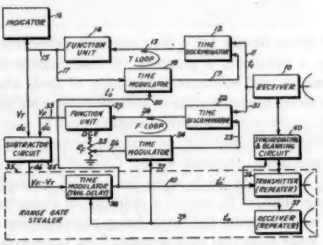


4,322,730

CONTROLLED DELAY GATE STEALER

Edward J. Chrzanowski, Linthicum, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 15, 1960, Ser. No. 36,457
Int. Cl.³ G01S 7/38
U.S. Cl. 343—18 E **9 Claims**



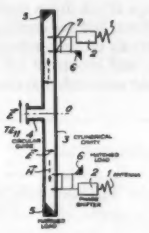
1. A controlled delay gate stealer for radar ranging countermeasures comprising: an own radar ranging receiver; an own radar repeater transmitter and repeater receiver, said radar repeater receiver being capable of receiving signals from distant radar and of causing said repeater transmitter to transmit same over said repeater transmitter as falsified radar echo signals; a delay circuit coupled between said radar repeater transmitter and said radar repeater receiver, a range control circuit coupled between said radar ranging receiver and said delay circuit, and connected to the coupling between said delay circuit and said repeater receiver, said radar ranging receiver adapted to receive echoes from said falsified radar echo signals for comparison in said range control circuit with said falsified range signals to produce a compared signal to effect a delay in said delay circuit for delaying said falsified echo signals transmitted by said radar repeater transmitter whereby falsified echo signals are transmitted back to the distant radar within the range tracking capabilities of the distant radar and are used for active radar range tracking of said distant radar position.

4,322,731

DISK-TYPE ULTRA-HIGH FREQUENCY ANTENNA ARRAY WITH ITS SUPPLY DEVICE AND THE APPLICATION THEREOF TO ANGULAR DEVIATION MEASUREMENT RADARS

Serge Drabowitch, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 2, 1980, Ser. No. 146,370
Claims priority, application France, May 8, 1979, 79 11629
Int. Cl.³ H01Q 1/36
U.S. Cl. 343—895 **7 Claims**



1. An antenna comprising:

(a) a cylindrical cavity having first and second faces and a diameter that is larger than its thickness from face-to-face;

(b) a plurality of elementary antennae disposed on the first face; and

(c) means coupled to the center of the second face, for coupling a circularly polarized TE_{11} mode wave to the cylindrical cavity, the coupling means including:

(a') a circular waveguide connected to the center of the cylindrical cavity;

(b') a first rectangular waveguide having a first rectangular port and being coupled to the circular waveguide, for coupling a first linearly polarized TE_{11} mode wave to the circular waveguide;

(c') circular polarizing means associated with the circular waveguide for generating from the linearly polarized TE_{11} mode wave, the circularly polarized TE_{11} mode wave; and

(d') a second rectangular waveguide having a second rectangular port and being coupled to the first rectangular waveguide, the first and second rectangular waveguides being oriented with respect to one another such that the planes of their respective larger dimensioned sides are perpendicular to one another, the first and second ports delivering on reception, sum and difference components, respectively, of signals received by the antenna.

4,322,732

INK JET RECORDING METHOD

Tatsuya Furukawa, and Sadao Kakeno, both of Yokohama, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1979, Ser. No. 64,104
Claims priority, application Japan, Dec. 8, 1978, 53/98308
Int. Cl.³ G01D 15/18
U.S. Cl. 346—75 **1 Claim**

1. Ink jet printing apparatus for depositing adjacent columns, each consisting of n contiguous ink drops, in m sequentially staggered groups each consisting of about n/m ink drops, the spacing between the ink drops of each group being nearly m times the ink drop diameter, so that said groups interlace with each other to form each of said columns, comprising:

an ink drop generator for forming an ink jet which subsequently breaks into a stream of ink drops;

a charge electrode for selectively charging the ink drops of said stream in synchronism with the generation of said drops by said ink drop generator;

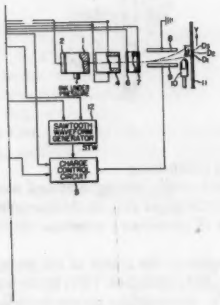
means for deflecting the charged ink drops in accordance with the charge thereof;

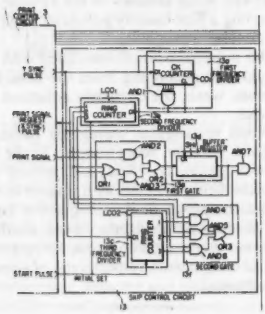
a print control circuit for driving said ink drop generator;

a charge control circuit for driving said charge electrode;

a sawtooth generator for generating successive sawtooth waveform cycles to vary the magnitude of the charge applied to said charging electrode by said charge control circuit, between the ends of each of said columns; and

a skip control circuit coupled to said print control circuit, said sawtooth waveform generator and said charge control circuit for enabling said charge control circuit only during time intervals corresponding to the generation of one of said groups of ink drops during each cycle of said sawtooth waveform, and for enabling said charge circuit during time intervals corresponding to the generation of different ones of said groups of ink drops during successive cycles of said sawtooth waveform, so that one complete column of ink drops is generated each m cycles of said sawtooth waveform, said skip control circuit comprising:





a first frequency divider having an input coupled to said print control circuit, and an output coupled to said sawtooth waveform generator;

a second frequency divider having an input coupled to the output of said first frequency divider, and a plurality of outputs;

a third frequency divider having an input coupled to said print control circuit, and a plurality of outputs;

a first gate means having a plurality of inputs coupled to corresponding ones of the outputs of said second frequency divider, a first auxiliary input for receiving a print signal from said print control circuit, and a second auxiliary input;

a second gate means having a first plurality of inputs coupled to corresponding ones of the outputs of said second frequency divider, a second plurality of inputs coupled to corresponding ones of the outputs of said third frequency divider, and an output for indicating when one of said first plurality of inputs occurs simultaneously with a corresponding one of said second plurality of inputs;

a buffer register having a first input coupled to said print control circuit, a second input coupled to the output of said first gate means, and an output coupled to the second auxiliary input of said second frequency divider; and

an AND gate having a first input coupled to the output of said buffer register, a second input coupled to the output of said second gate means, and an output coupled to said charge control circuit, said print control circuit including means for causing selected ones of said drops to be eliminated from said stream in accordance with character printing information.

4,322,733

HEAT SENSITIVE RECORDING HEAD DRIVE DEVICE

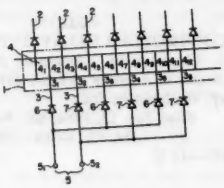
Haruhiko Moriguchi, and Takashi Ohmori, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1980, Ser. No. 127,690

Claims priority, application Japan, Mar. 22, 1979, 54-32240

Int. Cl.³ G01D *15/10*; H05B *1/00*

U.S. Cl. 346—76 PH **6 Claims**



1. A drive device for a heat sensitive recording head comprising: a substrate, a plurality of heat generating elements disposed on said substrate, a plurality of leads alternately arranged along opposite sides of said substrate, said leads being in operative contact with corresponding ones of said heat generating elements, a plurality of voltage dropping elements, said heat generating elements being divided into a plurality of groups, said leads each being connected through a voltage dropping element to one of a plurality of common terminals, one of said common terminals being provided for each group of said leads such that data signals of the same voltage may be inputted through said common terminals separately according to said groups to successively drive said heat generating elements in said groups, said voltage dropping elements being selected such that said heat generating elements generate heat uniformly.

4,322,734

VARIABLE SPEED ELECTROSTATOGRAPHIC APPARATUS

Yutaka Ebi; Tamio Ohori; Fuyuhiko Matsumoto, and Satoru Tomita, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 881,702, Feb. 27, 1978. This application Nov. 8, 1979, Ser. No. 92,396

Claims priority, application Japan, Feb. 2, 1977, 52-21284

Int. Cl.³ G01D *15/06*; G03G *15/02*

U.S. Cl. 346—153.1 **16 Claims**

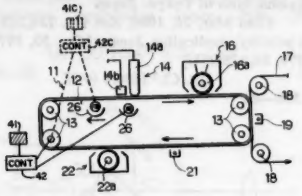
1. An electrostatographic apparatus comprising:

a moving member having a variable conductivity layer and a dielectric layer;

first means for forming an electrostatic image on the dielec-

tric layer as the moving member moves adjacent to the first means;

the first means comprising a plurality of electrodes and means for individually energizing the electrodes to produce electrical discharge from the electrodes; and



second means for varying the conductivity of the variable conductivity layer in accordance with a speed of movement of the moving member;

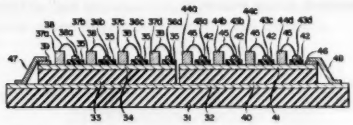
the variable conductivity layer being photoconductive, the second means comprising a variable intensity light source for illuminating the variable conductivity layer.

4,322,735

DISPLAY DEVICE

Tetsuo Sadamasa, Tokyo, and Osamu Ichikawa, Inagi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed May 5, 1980, Ser. No. 146,790
Claims priority, application Japan, May 11, 1979, 54-56950
Int. Cl.³ H01L *33/00*
U.S. Cl. 357—17 **8 Claims**



1. A display device comprising:

an insulation substrate;

first conductive means formed on said insulation substrate and including at least one elongated metal layer;

insulation means formed on said first conductive means and including at least one pair of insulation layers facedly disposed near but spaced from each other along the longitudinal direction of said metal layer;

second conductive means formed on said insulation means and including at least one pair of elongated metal layers formed respectively on said insulation layers in a position corresponding to the metal layer of said first conductive means;

a light source formed on said second conductive means and including at least one light emitting diode; and

connection means including at least one pair of connection members for connecting said first and second conductive means at sides opposite to the facing sides of said pair of insulation layers.

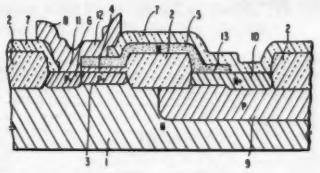
4,322,736

SHORT-RESISTANT CONNECTION OF POLYSILICON TO DIFFUSION

Isao Sasaki; Nobuaki Hotta, and Tohru Tsujide, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1979, Ser. No. 62,435
Claims priority, application Japan, Jul. 28, 1978, 53-92827
Int. Cl.³ H01L *27/04*
U.S. Cl. 357—59 **8 Claims**

1. A semiconductor device comprising a semiconductor substrate of one conductivity type, a first region of opposite conductivity type extending from one major surface of said semiconductor substrate to the interior of the substrate, a semiconductor layer of said one conductivity type extending over said semiconductor substrate via a first insulating film, a second insulating film covering said first region of said opposite conductivity type and said semiconductor layer, an aperture formed in said second insulating film so as to expose a portion of said first region of said opposite conductivity type



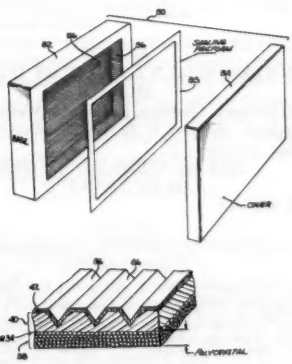
and a portion of said semiconductor layer close to said first region portion, a metallic layer provided within said aperture so as to connect said first region of said opposite conductivity type and said semiconductor layer, respectively, and a second region of said opposite conductivity type provided along the surface portion of the semiconductor substrate under said semiconductor layer at said aperture and adjacent to said first region of said opposite conductivity type.

4,322,737

INTEGRATED CIRCUIT MICROPACKAGING

John W. Sliwa, Jr., Stanford, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 20, 1979, Ser. No. 96,211
Int. Cl.³ H01L *23/02, 25/04, 23/48*
U.S. Cl. 357—82 **30 Claims**



1. An apparatus comprising:

a closed container of semiconductor material having an interior and exterior surface;

a plurality of preferentially formed grooves defined at least in part of said interior surface said part being monocrystalline in nature; and

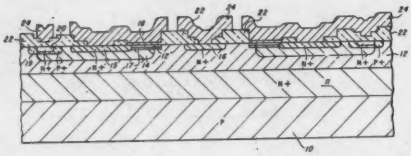
a fluid disposed in said closed container, said plurality of grooves being wetted, at least in part, by said fluid;

wherein said closed container communicates with a second closed container being filled with a noncondensable gas.

4,322,738
N-CHANNEL JFET DEVICE COMPATIBLE WITH EXISTING BIPOLAR INTEGRATED CIRCUIT PROCESSING TECHNIQUES

Kenneth M. Bell, Princeton, and Joe R. Trogolo, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas County, Tex.

Filed Jan. 21, 1980, Ser. No. 113,853
Int. Cl.³ H01L 29/80
U.S. Cl. 357—22 5 Claims

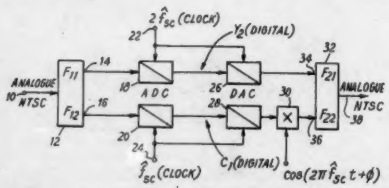


1. A semiconductor device comprising:
a body of monocrystalline semiconductor of a first conductivity type;
a first doped region of monocrystalline semiconductor of the opposite conductivity type lying in a surface of said body;
a second doped region of monocrystalline semiconductor of said first conductivity type lying in said surface and surrounded by said first doped region;
a third doped region of monocrystalline semiconductor of said first conductivity type lying in said surface and completely outside said first doped regions;
a fourth doped region of monocrystalline semiconductor of said first conductivity type lying wholly below said surface and between said second and third doped regions, said fourth doped region being in contact with said second doped region and partially outside said first doped regions; and
a fifth doped region of monocrystalline semiconductor of said opposite conductivity type lying in said surface above and in contact with said fourth doped region and in contact with said second doped region.

4,322,739
PROCESSING OF N.T.S.C. COLOR TELEVISION SIGNALS

John O. Drewery, Coulsdon, and Martin Weston, Epsom, both of England, assignors to British Broadcasting Corporation, London, England

Filed Apr. 7, 1980, Ser. No. 137,697
Int. Cl.³ H04N 9/32
U.S. Cl. 358—13 6 Claims

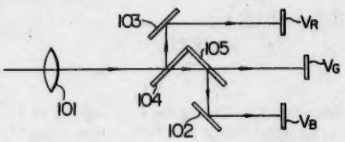


1. A method of digitally sampling the luminance component of an N.T.S.C. colour television signal, comprising:
sampling an input signal with a mean frequency of twice the colour subcarrier frequency; and
changing the sampling phase between each pair of lines by an amount equal to half the interval between samples.

4,322,740
SOLID-STATE COLOR IMAGING CAMERA

Iwao Takemoto, Kodaira; Shusaku Nagahara, Hachioji; Tsutomu Fujita, Mobara, and Kazuo Sato, Kodaira, all of Japan, assignors to Hitachi, Ltd. and Hitachi Denshi Kabushiki Kaisha, both of Tokyo, Japan

Filed Mar. 26, 1980, Ser. No. 134,285
Claims priority, application Japan, Mar. 30, 1979, 54-36856; Jul. 6, 1979, 54-92535[U]
Int. Cl.³ H04N 9/07
U.S. Cl. 358—44 7 Claims

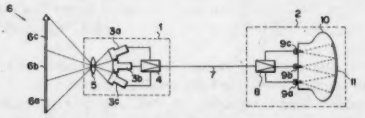


1. A solid-state color imaging camera comprising at least two solid-state image sensors each of which includes a two-dimensional array of picture elements arranged in lines and columns with respective predetermined pitches in vertical and horizontal directions, the optical position of the picture elements of one of said image sensors being shifted with respect to the picture elements of the other image sensor by half of the picture element pitch in the vertical direction, and means for shifting the horizontal scannings in odd-numbered fields and the horizontal scannings in even-numbered fields for one of said image sensors in timing by one horizontal scanning line from the other image sensor.

4,322,741
IMAGE DIVIDING SYSTEM FOR USE IN TELEVISION

Jun Kawabayashi, Koshajutaki 125, Shimotsuchidana 23, Pujisawa, Kanagawa, Japan

Filed Aug. 26, 1980, Ser. No. 181,366
Int. Cl.³ H04N 9/12
U.S. Cl. 358—56 3 Claims



1. An image dividing system for use in telecasting which converts the optical image of a subject into video signals by means of a pickup tube and processes said signals in a picture tube to obtain a video image of said subject, said system comprising a transmitter block which comprises a lens system forming a single optical image and a plurality of pickup tubes disposed adjacently, said optical image being focused on said tubes such that said image spans said tubes whereby each said tube picks up a portion of said image, and an image receiver block which comprises a picture tube having a plurality of electron guns corresponding to said pickup tubes, wherein beams emitted from said electron guns produce a continuous video image of said subject on a viewing screen.

4,322,742

METHOD AND APPARATUS FOR IMPROVING THE SHARPNESS OF A VIDEO PICTURE

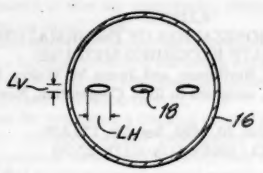
Susumu Yoshida, Naritanishi; Yoshio Ishigaki, Tokyo, and Kinya Shinkai, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 28, 1977, Ser. No. 855,304

Claims priority, application Japan, Nov. 30, 1976, 51/160885[U]

Int. Cl.³ H04N 9/20, 5/68

U.S. Cl. 358—65 10 Claims



1. A method of improving the sharpness of an image displayed on the screen of a cathode ray tube in video signal reproducing apparatus, comprising the steps of modulating the intensity of at least one electron beam in accordance with a video signal; scanning each said modulated electron beam in line-scanning and vertical directions, respectively, across said screen; modulating the scanning velocity of each said electron beam in said line-scanning direction in accordance with transitions of said video signal between relatively high and low levels of brightness of the displayed image; and improving the sharpness of said displayed image in the vertical direction by shaping each said electron beam to have an oval shape at its landing on said screen with the longer axis of said oval shape disposed in said line-scanning direction and the shorter axis of said oval shape disposed in said vertical direction.

4,322,743

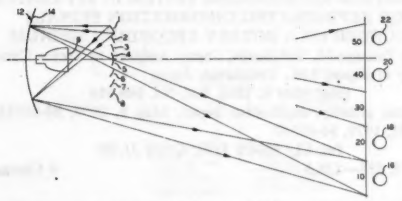
BRIGHT PICTURE PROJECTION INCLUDING THREE DIMENSIONAL PROJECTION

Glenn E. Rickert, Rte. 9, Huntington, Ind. 46750

Filed Oct. 9, 1979, Ser. No. 82,876

Int. Cl.³ H04N 9/54

U.S. Cl. 358—88 9 Claims



1. The method of limiting the visibility of stereoscopic pictures on a screen without the use of special eyeglasses or other picture separating device between the observer's eyes and the screen comprising the steps of:

providing a screen having light concentrating capability;

providing at least two stereoscopic pictures;

projecting a first picture onto said screen with a first projection optic;

projecting a second picture onto said screen with a second projection optic;

directing with the light concentrating capability of said screen, the light from the first projection optic into a first limited viewing area for use by the first eye of an observer;

direoting with the light concentrating capability of said screen, the light from the second projection optic into a second limited viewing area for use by the second eye of the observer;

so that the observer can position himself to see the first and not the second picture with his first eye, and see the second and not the first picture with his second eye whereby he can see the pictures as a three dimensional picture.

4,322,744

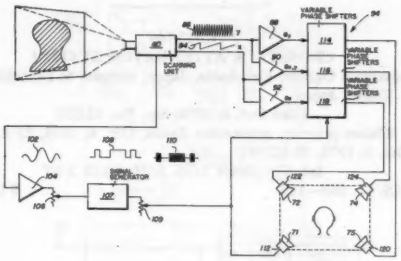
VIRTUAL SOUND SYSTEM FOR THE VISUALLY HANDICAPPED

Austin N. Stanton, 4240 Briar Creek La., Dallas, Tex. 75214

Filed Dec. 26, 1979, Ser. No. 106,508

Int. Cl.³ H04N 7/18

U.S. Cl. 358—94 10 Claims



4. A system for assistance to the blind, comprising:

a scanning means to produce scan signals which vary with the coordinates of a scan field of said scanning means, said scanning means detecting a reflected signal from shape features in said scan field;

a signal generator connected to said scanning means for generating a reflection signal proportional to the reflected signal detected by said scanning means;

at least four electro-acoustic transducers which are positioned in pairs in a vertical plane relative to a user's head;

said signal generator connected to one of said electro-acoustic transducers and connected respectively through a plurality of phase shifting means to said other electro-acoustic transducers for transmitting said reflection signal to said transducers; and

means connected to receive the scan signals for generating a plurality of different phase control signals which are supplied respectively to said phase shifting means to shift the phase of said reflection signal transmitted through a plurality of said phase shifting means as a function of the coordinates of the scan field determined by said scan signals, whereby virtual sound images are produced by said electro-acoustic transducers.

4,322,745

TELEVISION SIGNAL SCRAMBLING METHOD FOR CATV SYSTEM

Yoshifumi Saeki, and Kazuyoshi Onda, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 21, 1980, Ser. No. 132,444

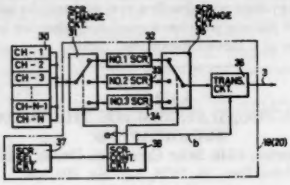
Claims priority, application Japan, Mar. 24, 1979, 54-34931

Int. Cl.³ H04N 7/16

U.S. Cl. 358—123 7 Claims

1. A television signal scrambling method for community antenna television system in which a central facility is coupled through cables to a number of terminal units for transmitting television signals from said central facility to said terminals and in which a plurality of scrambling circuits are provided in said central facility and a plurality of descrambling circuits corresponding to said scrambling circuits are provided in each terminal unit comprising the steps of: scrambling a television signal by selectively activating at different times at least two of

said scrambling circuits and descrambling the the scrambled television signal in each terminal unit by selectively activating



at said different times said descrambling circuits which correspond in scrambling mode to the activated scrambling circuits.

4,322,746

CROSSTALK ATTENUATOR SYSTEM

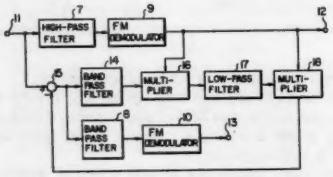
Masanori Oguino, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 5, 1979, Ser. No. 82,025

Claims priority, application Japan, Oct. 6, 1978, 53-122590; Oct. 6, 1978, 53-122591

Int. Cl.³ H04N *5/76, 5/21;* G11B *5/02*

U.S. Cl. 358—127 **5 Claims**



1. A crosstalk attenuator system in which a high-frequency main signal and a low-frequency sub-signal, which have been recorded as a frequency multiplexed compound signal on the same track of a recording medium, are reproduced as a video and a voice signal from the compound signal through reproduction and demodulation, said system comprising:

first signal separating means connected to receive said compound signal for separating a higher frequency portion of said compound signal which higher frequency includes said main signal, from said compound signal;

signal demodulating means connected to receive the output of said first signal separating means for generating a first signal component which is a demodulated signal of said higher frequency portion;

second signal separating means connected to receive said compound signal for separating a second signal component, which is a part of a lower frequency portion of said compound signal and said lower frequency portion includes said sub-signal, from said compound signal;

third signal separating means connected to receive said compound signal for separating a third signal component, which is a part of said lower frequency portion of said compound signal and excludes said sub-signal, from said compound signal;

relative analysis means connected to receive the outputs of said third signal separating means and said signal demodulating means, and including a multiplier, for comparing said first and said third signal components to generate an output signal according to the amount of crosstalk which appears from said first signal component as a crosstalk signal in said second signal component;

feedback signal generating means connected to receive the outputs of said relative analysis means and said signal demodulating means for generating a feedback signal which is equivalent to said crosstalk signal from said first signal component in accordance with said output signal of said relative analysis means; and

compensation means connected to receive said compound signal and the output of said feedback signal generating means for subtracting said feedback signal from said second and third signal components, respectively, whereby said compensation means generates said sub-signal with an attenuated crosstalk signal, the output of said compensation means being applied to the inputs of said second and said third signal separating means.

4,322,747

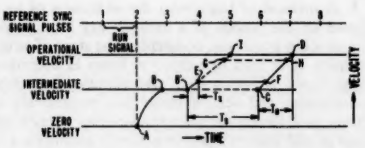
RAPID SYNCHRONIZATION OF INFORMATION ON SEPARATE RECORDED MEDIUMS

Robert A. Dischert, Burlington, and James M. Walter, Columbus, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 30, 1980, Ser. No. 173,629

Int. Cl.³ H04N *5/76;* G11B *27/10*

U.S. Cl. 358—127 **6 Claims**



1. In a replay system of the type wherein a recorded medium having a sync signal disposed thereon to identify discrete segments of information must be brought up to its operational velocity at which the recorded sync signal must be phase locked with an external reference sync signal, the improvement comprising:

framing means for controlling the recorded medium to accelerate it from an intermediate velocity to the operational velocity while its velocity is held constant before reaching the operational velocity to cause slippage between the recorded and reference sync signals in providing for the phase lock therebetween, with the separate durations of the acceleration and constant velocity being derived in proportion to the intermediate velocity.

4,322,748

HIGH-SPEED REPRODUCING SYSTEM IN APPARATUS FOR REPRODUCING INFORMATION SIGNALS RECORDED ON A ROTARY RECORDING MEDIUM

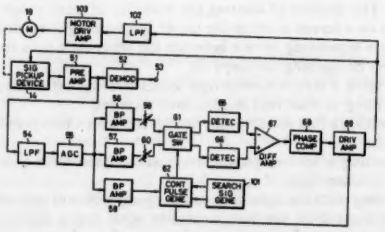
Kazuo Tatsuguchi, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 8, 1980, Ser. No. 148,014

Claims priority, application Japan, May 9, 1979, 54-55723; May 31, 1979, 54-67967

Int. Cl.³ H04N *5/76;* G11B *21/08*

U.S. Cl. 358—128.5 **6 Claims**



1. A high-speed reproducing system for use in an apparatus for reproducing signals from a rotary recording medium hav-

ing an information signal recorded in a track formed thereon in a spiral path or a concentric circular form and having reference signals recorded thereon interrelatedly with an information signal track, the signals being reproduced at a speed which is in the range of approximately 10 to 200 times the speed which is used during normal reproduction, said high-speed reproducing system comprising:

reproducing transducer means having a reproducing element for reproducing the information signal and the reference signals recorded on the rotary recording medium, and tracking control means for accomplishing a tracking control so that the reproducing element traces the information signal track;

feeding means for moving the reproducing transducer means in a feeding travel over the rotary recording medium, with movement of said reproducing transducer means being in the radial direction thereof;

means for producing a tracking control signal in response to the reference signals reproduced by the reproducing transducer means and for supplying the tracking control signal to the tracking control means; and

shift pulse generating means for generating a train of shift pulses having a desired repetitive frequency, said repetitive frequency arbitrarily varying a search speed, and for supplying the shift pulses thus generated to the tracking control means,

said reproducing element being shifted sequentially to trace an adjacent track every time said shift pulse is supplied to the tracking control means,

said shift pulse generating means having variable oscillation means for producing an oscillating signal having a frequency which is varied in response to a voltage applied thereto, and means for wave-shaping an output signal of said variable oscillation means into said shift pulses,

said shift pulses being a continuous train of pulses which are not related to blanking signals within the video signal.

4,322,749
SIGNAL GENERATOR FOR TELEVISION TESTING

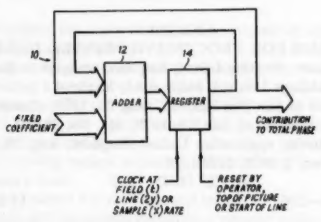
Martin Weston, Epsom, England, assignor to British Broadcasting Corporation, London, England

Filed May 19, 1980, Ser. No. 151,001

Claims priority, application United Kingdom, May 22, 1979, 17818/79

Int. Cl.³ H04N 5/13

U.S. Cl. 358—139 **7 Claims**



1. A television test signal generator comprising

means for generating television test signals comprising one more periodic waveforms; and

means for controlling the phase ϕ of each of said one or more periodic waveforms in accordance with one or more terms of the following expression:

$$\phi = k_\phi + k_t \cdot t + k_{t2} \cdot t^2/2 + k_y \cdot y + k_{yt} \cdot y \cdot t + k_{y2} \cdot y^2/2 + k_x \cdot x + k_{xt} \cdot x \cdot t + k_{xy} \cdot x \cdot y + k_{x2} \cdot x^2/2$$

wherein x is a horizontal frequency component, y is a vertical frequency component, t is a temporal frequency component, and wherein each of the coefficients k have selectably controlled values, and further wherein the phase ϕ is not controlled solely in accordance with one or more of the terms k_ϕ, $k_t \cdot t$, $k_y \cdot y$ and $k_x \cdot x$.

4,322,750
TELEVISION DISPLAY SYSTEM

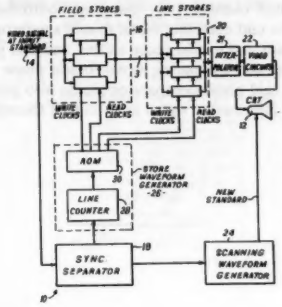
Arthur V. Lord, Lower Kingswood; Kenneth Hacking, Tadworth, and John O. Drewery, Coulsdon, all of England, assignors to British Broadcasting Corporation, London, England

Filed Feb. 19, 1980, Ser. No. 122,406

Claims priority, application United Kingdom, May 8, 1979, 15828/79

Int. Cl.³ H04N 5/02

U.S. Cl. 358—140 **15 Claims**



1. A television display system comprising,

input means adapted to receive a video signal representative of a moving scene and having a defined line rate and a field rate of 50 to 60 interlaced fields per second;

store means connected to the input means for storing at least part of the input video signal;

display means for displaying a television picture;

scan control means for causing said display means to scan with the field rate increased from the field rate of the input signal by a factor of at least substantially two and with the line rate increased from the corresponding rate of the input signal by at least substantially the same factor; and

means for selecting in accordance with the scanned location from the stored signal portions the appropriate signal portion for application to the display means.

4,322,751
DETECTOR CIRCUIT FOR A TELEVISION RECEIVER

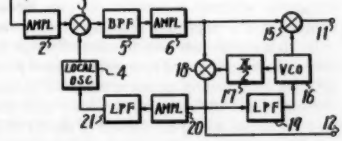
Masayuki Hongu, Kawasaki; Shigeru Ohmuro, Higashimine, and Masaharu Tokuhara, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 31, 1979, Ser. No. 89,908

Claims priority, application Japan, Nov. 10, 1978, 53-138575

Int. Cl.³ H04N 5/50, 5/62; H04B 1/16

U.S. Cl. 358—195.1 **6 Claims**



1. A detector circuit for processing a received signal comprising:

tuner means providing an intermediate frequency signal in

which first and second information signals are modulated on an intermediate-frequency carrier;

means for providing a detecting signal which is synchronized with said carrier and for providing a comparing signal which is a version of said detecting signal phase shifted by $\pi/2$, including a phase-locked loop circuit formed of a phase shifter and a controlled oscillator;

synchronous detecting means for synchronously detecting said intermediate frequency by said detecting signal to produce said first information signal at an output thereof; and

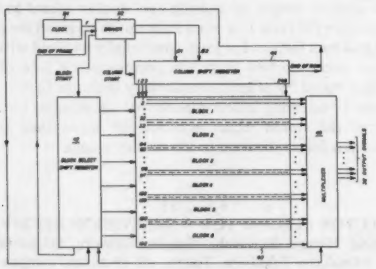
phase comparator means for phase-comparing said intermediate frequency signal with said comparing signal and providing a control signal to control the frequency of said controlled oscillator, so that said controlled oscillator provides said detecting signal to said synchronous detecting means and to said phase shifter, and said phase shifter provides said comparing signal to said phase comparator means, said phase comparator means also providing said second information signal at an output thereof.

4,322,752

FAST FRAME RATE SENSOR READOUT

James A. Bixby, San Diego, Calif., assignor to Eastman Technology, Inc., Rochester, N.Y.

Filed Jan. 16, 1980, Ser. No. 112,483
Int. Cl.³ H04N *3/14*
U.S. Cl. 358—213 **17 Claims**



1. Area image sensor apparatus comprising:

(a) an array of photosites arranged in rows thereof, each of said photosites being responsive to the same wavelength of radiation; and

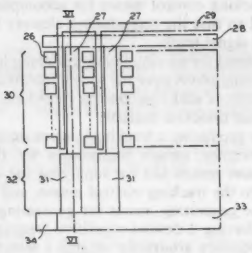
(b) means for reading out said photosite array in blocks of photosites wherein a plurality of said blocks are each comprised of a respective plurality of photosite rows that collectively represent two or more effective lines of resolution of a scene imaged upon said array of photosites, and wherein said reading means is effective to cause parallel readout of the photosite rows within each block to produce an output signal comprised of blocks of information in a serial format with each block of information being comprised of a plurality of row signals in a parallel format, thereby reducing the time required for sensor apparatus readout to a fraction of the time required were the sensor apparatus read out one row at a time.

4,322,753

SMEAR AND/OR BLOOMING IN A SOLID STATE CHARGE TRANSFER IMAGE PICKUP DEVICE

Yasuo Ishihara, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1980, Ser. No. 156,335
Claims priority, application Japan, Jun. 8, 1979, 54-72035
Int. Cl.³ H04N *3/14*
U.S. Cl. 358—213 **14 Claims**



1. A charge transfer image pickup device comprising:

at least one column of photo sensitive element means for accumulating charges in response to the light incident thereon;

at least one first shift register means comprising charge transfer devices arranged parallel with said column of photosensitive element means;

at least one transfer gate means for controlling the transfer of charges accumulated in said photosensitive element means to said first shift register means;

at least one second shift register means comprising a charge transfer device means coupled to one end of said first shift register means for temporarily storing the charges transferred from said first shift register, said second shift register means having at least as many charge transfer stages as said first shift register means has, said second shift register means being oriented so that it does not face said photosensitive element means;

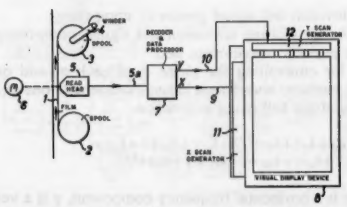
output means for converting the quantity of charges transferred from said second shift register into an electrical signal.

4,322,754

SYSTEMS FOR PROCESSING PRINTED DATA

Kenneth Mason, Hayling Island, England, assignor to Kenneth Mason Holdings Limited, Hampshire, England

Continuation of Ser. No. 828,145, Aug. 26, 1977, abandoned.
This application Jun. 21, 1979, Ser. No. 50,784
Claims priority, application United Kingdom, Aug. 31, 1976, 36014/76; Dec. 7, 1976, 50950/76
Int. Cl.³ H04N *1/22*
U.S. Cl. 358—296 **17 Claims**



1. Apparatus for providing a humanly legible visual display of alphanumeric characters recorded as digitally coded data on a photographic film, said digitally coded data being arranged

in lines corresponding to a line of alphanumeric characters is an original form at and also including a digitally coded address portion identifying the relative placement of said line of alphanumeric characters within said original format, said apparatus comprising:

a light source;

a photoelectric scanning head for generating sequential digitally coded electrical signals representative of one of said respective lines of coded data;

means for controllably positioning said film relative said scanning head such that any desired one of said lines of data scan is sequentially scanned by said scanning head;

a two-dimensional visual matrix display and memory device comprising parallel row electrodes running in a first direction and parallel column electrodes running in a second direction; and

decoder means connected to receive said coded electrical signals from said scanning head and to selectively activate respective pairs of display row and column electrodes in accordance therewith at a displayed line location corresponding to said digitally coded address data.

4,322,755

SYSTEM FOR REPRODUCING VIDEO SIGNALS IN SLOW-MOTION MODE

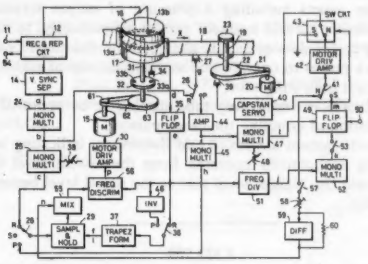
Yositeru Kosaka, Kamakura, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 10, 1979, Ser. No. 83,325

Claims priority, application Japan, Oct. 16, 1978, 53-126150

Int. Cl.³ H04N *5/78*; G11B *21/04, 15/48*

U.S. Cl. 360—10 **5 Claims**



1. A system for reproducing a video signal in a slow-motion reproduction comprising:

reproducing means including at least one rotary head for tracing a tape on which video signals have been recorded along parallel tracks extending obliquely to the longitudinal line of the tape to reproduce the recorded video signals from said tracks;

head driving means including a head motor for driving the rotary head;

capstan means for moving said tape;

capstan driving means including a capstan motor for driving said capstan means;

pulse generating means for generating recurring pulse voltages having a frequency which depends upon a slow-motion ratio;

energizing means responsive to the recurring pulse voltages for energizing said capstan motor to move said tape during the high level of the recurring pulse voltages by a distance equal to two pitches of the parallel tracks at a speed substantially equal to a tape speed in a normal reproduction and to stop said tape during the low level of the recurring pulse voltages; and

control means for controlling the rotation of the rotary head so that the relative tracing speed of the rotary head relative to the tape is substantially the same both at the time of intermittent tape travel and at the time of intermittent tape stoppage in a slow-motion mode, said control means comprising means for producing a constant voltage, means responsive to the recurring pulse voltages for producing control pulse voltages having the same frequency as the recurring pulse voltages, means for superimposing the control pulse voltages on the constant voltage, and means for applying the output voltage of said superimposing means to the head motor.

4,322,756

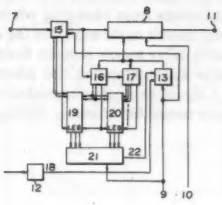
EDITING SYSTEM FOR PCM SIGNAL TAPE

Ken Onishi; Minoru Ozaki, and Kunimaro Tanaka, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1979, Ser. No. 33,986

Int. Cl.³ G11B *27/02*

U.S. Cl. 360—13 **7 Claims**



1. An editing system for a PCM signal tape, comprising:

means for detecting an edited part of the tape;

a detecting-memorizing means for detecting predetermined characteristics of the waveforms of a front signal and a back signal which are respectively recorded in front of and in back of the edited part and for memorizing said elements;

stopping means for stopping the write-in of the back signal in a memory at the time of the detection of the editing part;

detecting means for comparing the predetermined characteristics of the front signal and the back signal and for detecting the occurrence of a predetermined relative relationship therebetween; and

resetting means for resetting the stop of the write-in upon the occurrence of the predetermined relative relationship.

4,322,757

SERVO CONTROL APPARATUS FOR ADJUSTING THE PHASE OF A ROTARY HEAD ASSEMBLY TO CORRECT FOR ERRORS WHICH MAY OCCUR DUE TO CHANGES IN OPERATING CHARACTERISTICS, WHILE MINIMIZING PHASE ERRORS DURING EDIT OPERATIONS

Akira Hatakeyama, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 22, 1980, Ser. No. 123,722

Claims priority, application Japan, Feb. 26, 1979, 54-21619; Feb. 26, 1979, 54-21620

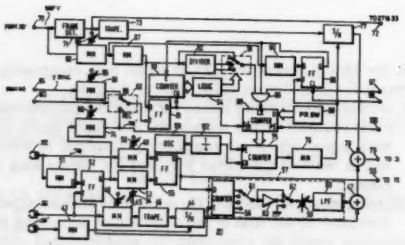
Int. Cl.³ H04N *5/795*

U.S. Cl. 360—14 **14 Claims**

1. Apparatus for controlling the phase of a rotary head assembly in a signal recording/reproducing system operable in an edit mode to reproduce signals from a record medium until a cut-in point is reached, at which point signals are recorded on said record medium, said apparatus comprising drive motor means for rotatably driving said head assembly to scan at least one head thereon across said record medium to selectively record or reproduce signals thereon; reference means for generating a reference signal of substantially constant frequency and phase; head position sensing means for sensing the rotary position of said head assembly and for generating a position

pulse representing said rotary position of said head assembly; phase comparison means for comparing the phases of said reference signal and said position pulse and for controlling the operation of said drive motor means as a function of said phase comparison; means for generating a position signal representing the relative position of said at least one head as it scans across said record medium; detecting means for detecting the phase difference between said reference signal and said position signal during an edit mode prior to reaching said cut-in point; variable delay means for delaying by a variable amount the position pulse whose phase is compared to the phase of said reference signal by said phase comparison means, said variable amount of delay being determined by said detected phase difference; means normally enabling said detecting means to detect the phase difference between said reference signal and said position pulse when signals are recorded on said record medium to determine said variable amount of delay; and means for inhibiting the delay imparted to said position pulse by said variable delay means from changing when said cut-in point is reached during an edit mode such that the delay then exhibited by said variable delay means remains fixed.

8. Apparatus for controlling the phase of a rotary head assembly in a signal recording/reproducing system, comprising drive motor means for rotatably driving said head assembly



to scan at least one head thereon across a record medium to selectively record or reproduce signals thereon; reference means for generating a reference signal of substantially constant frequency and phase; head position sensing means for sensing the rotary position of said head assembly and for generating a position pulse representing said rotary position of said head assembly; phase comparison means for comparing the phases of said reference signal and said position pulse and for controlling the operation of said drive motor means as a function of said phase comparison; means for generating a position signal representing the relative position of said at least one head as it scans across said record medium; selecting means for selecting either said position pulse or said position signal; detecting means for detecting the phase difference between said reference signal and the selected position pulse or position signal; variable delay means for delaying by a variable amount the position pulse whose phase is compared to the phase of said reference signal by said phase comparison means, said variable amount of delay being determined by said detected phase difference; and means for adjusting the rate at which said delay is varied such that said delay is varied at a relatively rapid rate when said detecting means initially detects phase differences, and said delay is varied at progressively slower rates when said detecting means detects further phase differences.

4,322,758

FLUORESCENT INDICATOR

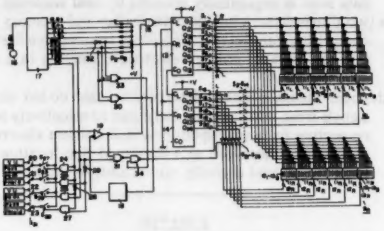
Hiroshi Ohya, Hachiohji, and Kozo Kobayashi, Kodaira, both of Japan, assignors to Nakamichi Corporation, Tokyo, Japan

Filed May 1, 1980, Ser. No. 145,864

Claims priority, application Japan, May 7, 1979, 54-55416; May 15, 1979, 54-64747[U]; May 21, 1979, 54-68115[U]; May 25, 1979, 54-70335[U]; May 30, 1979, 54-72661[U]

Int. Cl.³ G11B *27/36*; H05B *37/00*

U.S. Cl. 360—31 **9 Claims**



1. A fluorescent indicator comprising:

at least one fluorescent indicating tube having a plurality of segment anodes arranged in a row from a lowest level side to a highest level side;

pulse generator means to generate clock pulses having the number of pulses corresponding to the signal levels to be measured;

counter means including a plurality of output terminals connected to said segment anodes, respectively, to have output signals sequentially generated on the count of said clock pulses to operate said segment anodes of said fluorescent indicating tube;

said fluorescent indicating tube starting to be operated on initiation of counting the clock pulses;

and said segment anodes of said fluorescent indicating tube being sequentially operated from the lowest level side toward the highest level side as the signal level becomes higher.

4,322,759

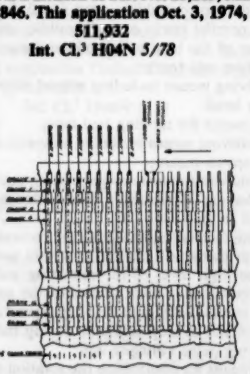
METHOD AND APPARATUS FOR RECORDING AND REPRODUCING VIDEO

George E. Zenzefilis, 27 Los Vientos, Camarillo, Calif. 93010

Continuation-in-part of Ser. No. 289,989, Sep. 18, 1972, abandoned, which is a division of Ser. No. 23,289, Mar. 27, 1970, Pat. No. 3,701,846. This application Oct. 3, 1974, Ser. No. 511,932

Int. Cl.³ H04N *5/78*

U.S. Cl. 360—33 **17 Claims**



1. An apparatus for recording and reproducing video signals having synchronizing signals denoting line and field intervals

of said video signals, comprising a record medium, signal recording means arranged adjacent said record medium and receiving the video signals for recording on said record medium, said record medium and signal recording means being moved relative to each other so that the video signals are recorded on said record medium in successive record tracks which extend parallel to each other and have abutting longitudinal margins with said synchronizing signals of the video signals recorded in adjacent record tracks being aligned with each other in the direction at right angles to the length of said tracks, and at least one signal reproducing head moved relative to said record medium for scanning said record tracks in succession, said signal reproducing head having an effective width substantially greater than the width of each of said record tracks so as to simultaneously scan, and reproduce signals from, the full width of one of said record tracks and a portion of the width of at least one of the record tracks adjacent thereto.

4,322,760

TRIBIT DECODER FOR USE IN A DISC FILE SYSTEM

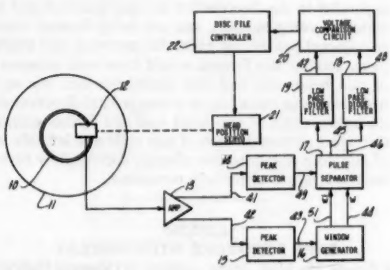
John F. Hardwick, Whinneyknowe, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 20, 1979, Ser. No. 96,077

Claims priority, application United Kingdom, Nov. 29, 1978, 46439/78

Int. Cl.³ G11B *21/10*

U.S. Cl. 360—77 **6 Claims**



1. A tribit decoder for determining the displacement of a transducer from a sync track, said tribit decoder comprising:

a detector means, receiving analogue signals from the transducer for producing pulse width modulated pulses, the width of the pulse depends on the relative amplitude between successive tribit position peaks;

a pulse separation means, connected to said detector means for dividing the output of said detector means into a first and second pulse stream, each of said pulse streams corresponds to a particular tribit position peak; and,

a comparison means, receives as inputs said first and second pulse streams, for comparing pulse characteristics from said first pulse stream with pulse characteristics from said second pulse stream and producing an output signal indicating the displacement of the transducer from the center of a sync track.

4,322,761

TAPE GUIDE IN A HELICAL SCAN CASSETTE RECORDER

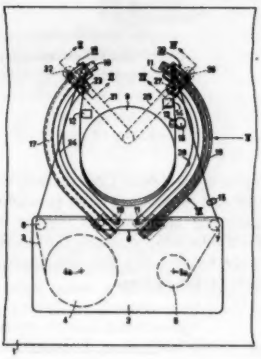
Franz Beitler; Gerhard Maryschka, and Heinrich Shuster, all of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 36,729, May 7, 1979, abandoned. This application Nov. 13, 1980, Ser. No. 206,583

Claims priority, application Austria, May 5, 1978, 3278/78

Int. Cl.³ G11B *15/66*

U.S. Cl. 360—85 **12 Claims**



1. A helical scan tape cassette recording and/or playback apparatus having a deck plate adapted so that a cassette may be disposed thereon, a cylindrical head drum supported on the deck plate, and tape guide means for guiding a tape along a path on a cylindrical surface of the drum, said means including a tape guide element for engaging a tape in a cassette disposed on the deck plate, pulling part of the tape out of the cassette and laying the tape on the cylindrical surface of the drum,

wherein the tape guide means includes a guide rail on the deck plate defining a longitudinal at least partly curved guide path, and

a support mounting said tape guide element, including a carriage having a U-shaped cross-section having a central portion and two side portions adjoining the central portion and situated on opposite sides of the guide rail, arranged for longitudinal movement on the guide rail along said path, and means cooperatively engaging between at least an inner side of one of said side portions and the respective side of said guide rail for positioning said carriage with respect to said rail along at least one direction transverse to said longitudinal movement.

4,322,762

DEVICE FOR POSITIONING OBJECTS OF LOW MASS

Klaus Manzke, Westheim, and Roland Brotzler, Hochdorf-Assenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 18, 1979, Ser. No. 85,966

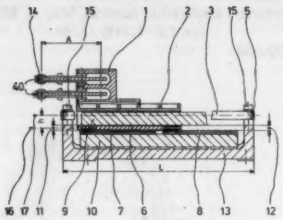
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846599

Int. Cl.³ G11B *21/08*

U.S. Cl. 360—106 **7 Claims**

1. A device for positioning objects of low mass, particularly magnetic heads over preselected tracks on at least one magnetic disc which can be coupled to a drive in a memory processing unit in which at least one head support, displaceable toward and away from the axis of rotation of the magnetic disc, for at least one magnetic head, and at least one coil support for a linear drive means are provided, the said drive means comprising at least one flat coil which projects into at least one working air gap of a magnet assembly comprising at least one

flat magnet, wherein the head support and the support for the flat coil are both mounted on a displaceable carriage in the form of a hollow member, wherein there are provided two flux conducting members which extend in spaced parallel relation to each other in the direction of the carriage movement, with said carriage enclosing at least one of said flux conducting



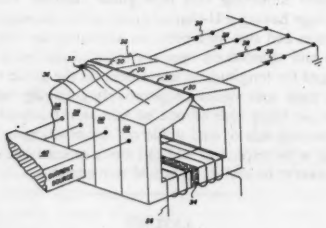
members on at least three sides thereof, wherein said support for the flat coil extends in a plane parallel to and between said flux conducting members and wherein there are provided means for displaceably mounting the carriage essentially in the plane of the flat coil in which last-mentioned plane the force vector acts on the carriage.

4,322,763

MAGNETIC HEAD HAVING A CONTROLLABLE HIGH-PERMEABILITY TUNNEL WITHIN A LOW-PERMEABILITY SLEEVE

James U. Lemke, Del Mar, Calif., assignor to Spin Physics, Inc., San Diego, Calif.

Filed Mar. 5, 1980, Ser. No. 127,278
Int. Cl.[3] G11B *5/22, 5/28*
U.S. Cl. 360—115 **11 Claims**



1. Apparatus forming part of a magnetic signal-transducer, adapted for cooperation with a magnetic recording medium, comprising:

(a) first and second pole parts formed of magnetic electrically conductive material;

(b) electrically conductive spacer means, less than about 15 microinches in thickness, sandwiched between said pole parts and in electrical contact with said pole parts, thereby to form, with said pole parts, a transducer gap structure having an effective magnetic gap length of less than about 15 microinches adapted to contact said recording medium; and

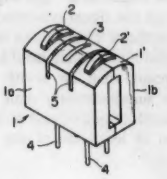
(c) means for selectively passing an electrical current from one pole part to the other via said spacer means, thereby to alter the magnetic properties of the pole parts in proximity to said medium.

4,322,764

MULTI-TRACK MAGNETIC HEAD FOR A TAPE PLAYER

Yukio Tanaka, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Mar. 5, 1980, Ser. No. 128,233
Claims priority, application Japan, Mar. 6, 1979, 54-25772
Int. Cl.[3] G11B *5/28, 5/22*
U.S. Cl. 360—129 **3 Claims**



1. A multi-track magnetic head for a magnetic recording apparatus, comprising:

(a) a plurality of heads having head gaps aligned transversely with respect to the direction of the movement of a magnetic recording medium, each of said heads including a core on which a winding is provided;

(b) at least one shielding plate disposed between two adjacent heads in the vicinity of said head gaps;

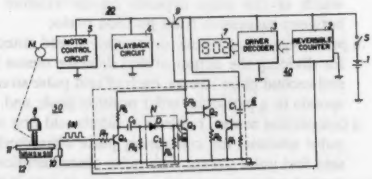
(c) a metallic core-holder for supporting said plurality of heads, said core holder having at least a front wall having openings through each of which a tip portion including said head gap of each of said heads is exposed outside of the core-holder to be in contact with said magnetic recording medium, and right and left side walls each extending from each edge of said front wall, the cross-section of said front wall taken in the direction of the movement of said magnetic recording medium being convex, at least one slot being formed in said front wall of said core-holder in such a manner that the longitudinal direction of said slot is parallel to the direction of the movement of said magnetic recording medium, said slot being located between an adjacent pair of said heads for receiving said shielding plate, another slot formed in said front wall between one of said heads and said first mentioned slot, the second mentioned slot extending in a longitudinal direction along the entire width of said front wall and further extending through a portion of each of said right and left side walls of said core holder so that electric current flow between the head gaps is effectively prevented.

4,322,765

TAPE RECORDER WITH DISPLAY

Kenji Furuta, Hachioji, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Dec. 27, 1979, Ser. No. 107,707
Claims priority, application Japan, Dec. 29, 1978, 53-161574
Int. Cl.[3] G11B *27/34*
U.S. Cl. 360—137 **4 Claims**



1. A tape recorder comprising an assembly including play-

back and motor control circuits; a signal generating device which generates a signal proportional to the amount of tape travel; a counter to interpret the signal from the signal generating device; electro-optical display equipment having an indicator to display the value of the calculation of the counter; a power source for energizing both the assembly and the electro-optical display equipment; connecting means for connecting the electro-optical display equipment to the power source; a tape travel detection circuit which detects tape travel from the signal from the signal generating device; and a switching element controlled by the output of the tape travel detecting circuit and located between the assembly and the connecting means.

4,322,766

MONITORING DEVICE FOR THE CAPACITOR BATTERY OF A D-C FILTER CIRCUIT

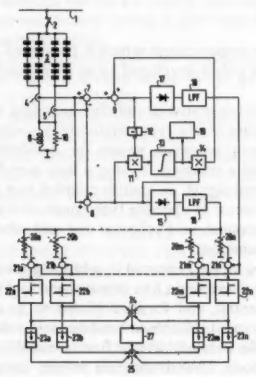
Michael Becker, Uttenreuth; Klaus Renz, Fürth, and Manfred Weibelzahl, Weiher, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,754

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1979, 2930034

Int. Cl.³ H02H *7/16*

U.S. Cl. 361—17 4 Claims



1. A circuit for monitoring the capacitor battery of a filter circuit connected to a transmission line, the capacitor battery being composed of a multiplicity of individual capacitors which are arranged in at least two similar parallel legs, each leg having a plurality of capacitors connected in series, characterized in that there are provided:

a. means for producing a first signal which is responsive to the total alternating current flowing through the capacitor battery,

b. means for producing a second signal which is responsive to the difference between the alternating currents flowing through the parallel legs of the capacitor battery,

c. means for producing at least one third signal which is responsive to the difference between a predetermined fraction of said first signal, and said second signal, and

d. means responsive to said third signal for producing a fault indication signal if the amplitude of said third signal exceeds a predetermined threshold value.

4,322,767

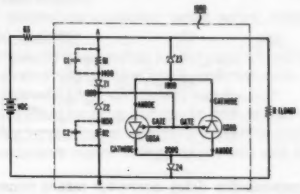
BIDIRECTIONAL SOLID-STATE PROTECTOR CIRCUITRY USING GATED DIODE SWITCHES

Mahmoud A. El Hamamsy, Watchung; William C. King, Chatham Township Morris County, and Stephen Knight, Berkeley Heights, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 972,057, Dec. 20, 1978, abandoned. This application Feb. 11, 1980, Ser. No. 120,281

Int. Cl.³ H02H *3/20*

U.S. Cl. 361—56 9 Claims



1. Circuitry to be connected to first and second circuit terminals across a load to be protected comprising:

four diodes each having the characteristic that it passes little current therethrough below a threshold applied voltage and experiences a relatively constant voltage drop thereacross for increasing current therethrough;

first and second switches each having first and second output terminals and a control terminal;

first and second resistors;

each switch being a device of the type comprising a semiconductor body having a bulk portion;

a localized first region which is of the one conductivity type, and a localized second region and a localized third region which are both of the opposite conductivity type;

each of the localized first, second, and third regions being of relatively low resistivity as compared to the bulk portion of the semiconductor body and being spaced apart from each other;

the switch being adapted to selectively facilitate current flow between the first and third regions or to divert a sufficient portion of said current into the second region so as to substantially interrupt (cut off) said current flow between the first and third regions;

the switch being also adapted to selectively substantially inhibit current from flowing between the first and third regions;

the first resistor and the first diode are serially connected together and the combination of both is connected between the first terminal and the control terminals of the two switches;

the second resistor and the second diode are serially connected together and the combination of both is connected between the second terminal and the control terminals of the two switches;

the cathode and anode of the third diode are connected to the first circuit terminal and to the first output terminal of the first switch, respectively; and

the cathode and anode of the fourth diode are connected to the second circuit terminal and to the first output terminal of the second switch, respectively.

4,322,768

MULTI-TERMINAL PROTECTIVE RELAY SYSTEM

Kouji Maeda, and Tadahiro Goda, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1981, Ser. No. 244,860

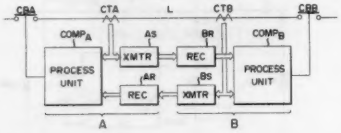
Claims priority, application Japan, Mar. 25, 1980, 55-39820

Int. Cl.³ H02H *7/26*

U.S. Cl. 361—64 1 Claim

1. A multi-terminal protective relay system for protecting a

transmission line on the current differential principles comprising, at each of a plurality of terminals connected to a transmission line, means for drawing a current in the analog form flowing therethrough, analog-to-digital converter means, connected to said current drawing means, encoder means connected to said analog-to-digital converter means, transmitter means connected to said encoder means, receiver means, decoder means connected to said receiver means, first buffer memory means connected to said analog-to-digital means, second buffer memory means connected to said decoder



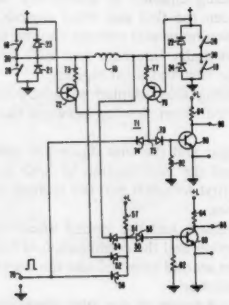
means, transmission delay corrector means connected to said first buffer memory means, clock means for delivering control clock pulses to said analog-to-digital converter means, said encoder means, said transmitter means, said first buffer memory means, and said transmission delay corrector means, and processing means connected to both said transmission delay corrector means and said second buffer memory means thereby to eliminate the necessity of preparing a synchronizing signal for said analog-to-digital converter means disposed at said plurality of terminals.

4,322,769

ELECTRIC SWITCH OPERATION MONITORING CIRCUITRY

Evert S. Cooper, Morgan Hill, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,080
Int. Cl.³ G08B 21/00
U.S. Cl. 361—88 **7 Claims**



1. Operation monitoring circuitry for an electric switching circuit of the type including a bipolar eled device, a source of power having two terminals, one switch connecting one terminal of said source of power to one terminal of said load device, and another switch connecting the other terminal of said source of power to the other terminal of said load device, a further switch connecting said other terminal of said load device to said one terminal of said source of power and an additional switch connecting said one terminal of said load device to said other terminal of said source of power, and a diode shunting each of said switches, comprising

test signal input terminals,

monitor level output terminals,

logical circuitry connected to both terminals of said load device, to said test signal terminal and to said monitor level output terminals,

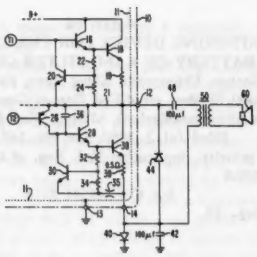
said logical circuitry including coincidence circuits having actuating devices connected to said test signal input circuits, having active devices individual to said output terminals, and having sensing devices individual to both terminals of said load device, all connected for changing the output levels at said output terminals in response to test pulses applied at said input terminals at predetermined times in the switching cycle.

4,322,770

LATCH-UP PREVENTION CIRCUIT FOR POWER OUTPUT DEVICES USING INDUCTIVE LOADS

GeneK. Sendelweck, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 28, 1980, Ser. No. 125,647
Int. Cl.³ H02H 9/04
U.S. Cl. 361—91 **5 Claims**



1. A power output circuit which is prevented from latching due to voltage pulses developed by an inductive load comprising:

a monolithic integrated circuit chip including a semiconductor substrate of one type conductivity coupled to a point of reference potential, means for developing a control signal, and a transistor having a base coupled to receive said control signal, an emitter coupled to a first terminal, and a collector of opposite type conductivity coupled to a second terminal, said collector and said substrate forming a diode junction;

a first diode, located external to said integrated circuit chip, coupled between said first terminal and said point of reference potential, and forward biased so as to maintain a given potential difference between said reference potential and the potential at said first terminal;

a second diode, located external to said integrated circuit chip and coupled between said first and second terminals in parallel with the collector-to-emitter path of said transistor, and poled for conduction in a direction opposite to the forward biased conduction direction of the collector-to-emitter path of said transistor at a first threshold level at said collector electrode of said transistor which is substantially equal to the difference between said potential at said first terminal and the forward biased voltage drop of said second diode; and

means located external to said integrated circuit chip, for coupling said inductive load between said first and second terminals in parallel with said collector-to-emitter path of said transistor,

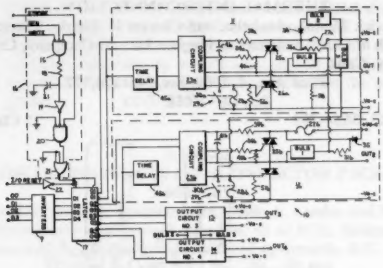
wherein voltage pulses developed by said inductive load at said collector electrode of said transistor render said second diode conductive at said first threshold level, which is attained by said voltage pulses prior to attaining a second threshold level which is sufficient to forward bias said diode junction.

4,322,771

TRIAC-PROTECTED OUTPUT CIRCUIT

Odo J. Struger, Chagrin Falls, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Dec. 31, 1979, Ser. No. 108,385
Int. Cl.³ H02H 5/04
U.S. Cl. 361—104 6 Claims



1. An output circuit responsive to digital signals to couple and decouple an a-c supply to a load, the output circuit comprising:

(a) a main fuse;

(b) a first electronic switch connected in series with the main fuse across a first a-c supply terminal and a first load output terminal, the first electronic switch having a gate input for receiving a first actuate signal;

(c) a second electronic switch connected in series with the first electronic switch and the main fuse and connected between the first load output terminal and a common second terminal for the a-c supply and the load, the second electronic switch having a gate input for receiving a second actuate signal;

(d) means responsive to an "on" digital input signal for coupling the first actuate signal to the gate input of the first electronic switch; and

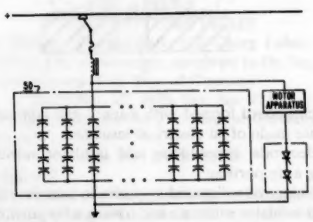
(e) means responsive to an "off" digital input signal only when the first electronic switch is still conducting for coupling the second actuate signal to the gate input of the second electronic switch to cause it to conduct a current that is sufficient to interrupt the main fuse.

4,322,772

RAPID TRANSIT SYSTEM TRANSIENT VOLTAGE SUPPRESSION APPARATUS

Warren C. Fry, Connellsville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 954,496, Oct. 25, 1978. This application Mar. 21, 1980, Ser. No. 132,566
Int. Cl.³ H02H 7/10
U.S. Cl. 361—111 20 Claims



1. In transient suppression apparatus operative with a power supply providing current to a load and having inductive stored energy, the combination of

thyristor switch means having a known voltage rating and connected to said power supply for regulating the current supplied to said load,

capacitor means having a dissipative zener conducting voltage below the known voltage rating of said thyristor switch means and connected to said power supply for absorbing said inductive stored energy to provide a limit on the resulting voltage applied to the thyristor switch means,

with said capacitor means comprising a filter bank including a plurality of parallel connected branches and with a plurality of electrolytic capacitors being series connected in each said branch,

each said electrolytic capacitor being series connected in each said branch,

each said electrolytic capacitor in every one of said branches having a rated voltage that has a predetermined relationship to the voltage of said power supply, and

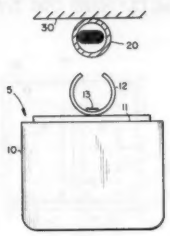
a plurality of electrolytic capacitors in each of said branches dissipating by zener conductivity a predetermined portion of said inductive stored energy to provide said limit.

4,322,773

TELEPHONE CIRCUIT PROTECTOR APPARATUS

Mauri L. Bordner, Rte. 3, Box 28, Pierceton, Ind. 46562

Filed Jan. 7, 1980, Ser. No. 109,852
Int. Cl.³ H02H 3/22
U.S. Cl. 361—119 10 Claims



1. Telephone circuit protector apparatus comprising:

(a) a telephone circuit protector, said protector including a plurality of lead terminals, a ground terminal, and means for conducting a high voltage current applied across said lead terminals to said ground terminal;

(b) mounting means for mounting said protector, said means including a tubular member of resilient material having an axial slot, said tubular member being attached to said protector and being adapted to rigidly receive through said axial slot a cylinder of approximately the same diameter as the inside diameter of said tubular member; and

(c) grounding means for electrically connecting said ground terminal to the interior of said tubular member.

4,322,774

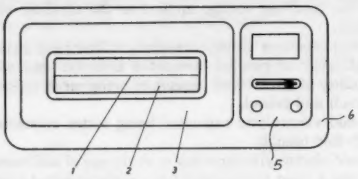
ARRANGEMENT FOR GENERATING IONS

Carl M. Fleck, Schelleingasse 14/2, Vienna, Austria

Filed Jul. 5, 1979, Ser. No. 54,703
Claims priority, application Austria, Jul. 6, 1978, 4921/78
Int. Cl.³ H01T 19/00
U.S. Cl. 361—231 4 Claims

1. An arrangement for generating ions and for emitting the generated ions into the atmosphere, comprising an electrically conducting wire connected to a high voltage source, source, a reflector screen at a high electric potential arranged at a distance from the wire and partly surrounding the wire, the high electric potential on the reflector screen having the same polarity as the high voltage applied to the wire, an electrically insulating housing wherein the wire and reflector screen are mounted, the housing defining an opening in alignment with

the wire and permitting passage of ions from the wire into the atmosphere outside the housing, an auxiliary electrode mounted on the housing adjacent the opening and extending at least along a part of the circumference of the opening, the auxiliary electrode being at least partially electrically conduct-



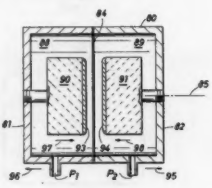
ing whereby it is charged by the ions, and electrically insulating means mounting the auxiliary electrode on the electrically insulating housing whereby the auxiliary electrode may be charged by the ions passing through the opening and the auxiliary electrode concentrates and repels the emitted ions.

4,322,775

CAPACITIVE PRESSURE SENSOR

Leroy C. Delatorre, 9220 Clairwood #2024, Houston, Tex. 77036

Filed Oct. 29, 1979, Ser. No. 89,162
Int. Cl.³ H01G *7/00, 5/34*
U.S. Cl. 361—283 **4 Claims**



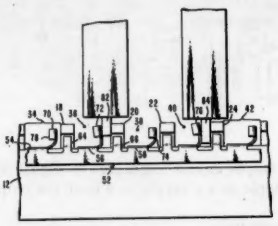
1. A pressure sensing transducer comprising:
housing means having means including a first coefficient of expansion causing movement related to temperature;
first, spaced apart capacitor plate means defining a first capacitor means in said housing means for producing a first capacitance measurement;
second, spaced apart capacitor plate means defining a second capacitor means in said housing means for producing a second capacitance measurement;
said first and second capacitor means being functionally interrelated to provide said first and second capacitance measurements for obtaining a ratio of said capacitance measurements;
one of said first and second capacitor plate means being a pressure responsive diaphragm, said pressure responsive diaphragm having a flexibility characteristic which is a dependent function of temperature;
base means in said housing means for supporting said other plate means of each of said first and second capacitor means so that a given electrical capacitance measurement relationship at a given temperature is established for each capacitor means with respect to the physical spacing between the plate means for each capacitor means,
said base means having means including a second coefficient of expansion, causing movement related to temperature in a direction opposite to the movement of said housing,
said base means and said housing means being subject to proportionately change the physical spacing between the plate means by opposite movement of said base means and said housing means in response to a change in temperature with respect to said given temperature range so as to compensate for changes in diaphragm flexibility due to said change in temperature and to compensate the ratio of said capacitance measurements so that said ratio is independent of the effects of said change in temperature with respect to said given temperature.

4,322,776

THERMAL INTERCONNECTION

Frederick D. Job, Anaheim, and Charles E. Eberly, Placentia, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 4, 1980, Ser. No. 174,977
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—386 **12 Claims**



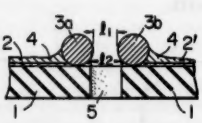
1. A thermal interconnection comprising:
a cold plate having a plurality of upstanding flanges, with slots between said cold plate flanges, said cold plate having end faces at the end of said flanges;
a spring positioned on said cold plate, said spring having a plurality of cross pieces, each said cross piece being respectively positioned in a slot between said flanges on said cold plate, said cross pieces each engaging against the flange on one side of its cold plate slot, a spring pressure flange curved upwardly from each of said cross pieces, said spring pressure flange facing the cold plate flange on the other side of said cold plate slot containing its cross piece, each of said cross pieces having the spring pressure flange facing an adjacent cold plate flange.

4,322,777

CIRCUIT BOARD FORMED WITH SPARK GAP

Yasuomi Ueta, Yokohama, and Tatsuro Toyama, Kanagawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 131,771
Claims priority, application Japan, Mar. 26, 1979, 54-34420
Int. Cl.³ H05K *1/18*
U.S. Cl. 361—397 **7 Claims**



1. A circuit board formed with a spark gap comprising:
a substrate made of an electrical insulator;
a first electrode disposed on said insulator substrate and having a tip portion;
a second electrode disposed opposite to said first electrode on said insulator substrate and having a tip portion spaced apart by a predetermined first distance from the tip portion of said first electrode;
a first metal ball electrically connected to said first electrode and disposed on the tip portion of said first electrode at a precise position so as to be spaced apart by a second

distance which is shorter than said first distance from the tip portion of said second electrode;

first positioning means formed on the position of said insulator substrate on which said first metal ball is disposed for holding said first metal ball at the precise position;

a second metal ball electrically connected to said second electrode and disposed on the tip portion of said second electrode at a precise position so as to be spaced apart by a third distance which is shorter than said first distance from the tip portion of said first electrode; and

second positioning means formed on the position of said insulator substrate on which said second metal ball is disposed for holding said second metal ball at the precise position.

4,322,778

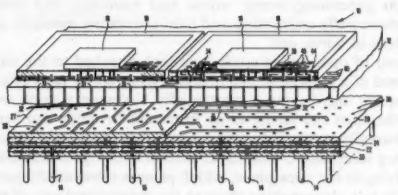
HIGH PERFORMANCE SEMICONDUCTOR PACKAGE ASSEMBLY

Donald R. Barbour, Poughkeepsie; Guido A. Lemke, and Steven Magdo, both of Hopewell Junction, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jan. 25, 1980, Ser. No. 115,580

Int. Cl.³ H01L *23/02*; H05K *1/11*, *1/14*

U.S. Cl. 361—414 **20 Claims**



1. A package assembly for interconnecting a plurality of integrated circuit semiconductor devices having a multi-layer dielectric material substrate with a signal fan-out wiring pattern and internal wiring metallurgy interconnecting the semiconductor devices, a plurality of integrated circuit semiconductor devices supported on the top surface of the substrate in electrically connected operative relation, and external signal and power connection means, the improvement comprising

a power supply distribution system for connecting electrical supply voltages to said devices from power connection means comprised of radial waveguide structure with parallel waveguide planes with a low input impedence, said waveguide planes located between said signal fan-out wiring pattern and the said internal wiring metallurgy in said substrate, vertical vias connecting said waveguide planes to said devices and external connection means, said waveguide planes connected in common to all of said plurality of devices.

4,322,779

PHOTOFLOOD LIGHT

Hermann Böhme, Wolfenbüttel, and Georg Lohse, Vechelde, both of Fed. Rep. of Germany, assignors to Dr. Ing. Bohme & Co., Braunschweig, Fed. Rep. of Germany

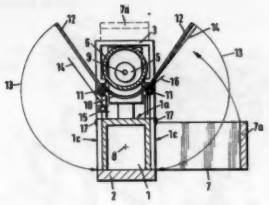
Filed Nov. 27, 1979, Ser. No. 97,873

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1978, 2851245

Int. Cl.³ G03B *15/02*

U.S. Cl. 362—17 **21 Claims**

1. A photoflood light, comprising an elongated housing having an upper face and major surfaces; a reflector element upwardly spaced from said upper face and having a curved cross-section and extending lengthwise of said housing; a lamp mounted within said reflector and extending lengthwise of the same; means for supporting said reflector element and said lamp on said housing; and a pair of two light baffles mounted for tilting movement about pivot axes extending along respective opposite longitudinal edges of said reflector element, to



and from a rest position in which they are located at least in parallel with the planes of respective major surfaces of said housing and define with the same a generally rectangular body.

4,322,780

ILLUMINATION MECHANISM

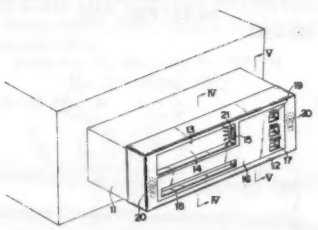
Yoshiaki Murakami; Akira Ohmori, and Seishichi Ohhara, all of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1980, Ser. No. 119,236

Claims priority, application Japan, Feb. 16, 1979, 54/17662[U]

Int. Cl.³ H04M *1/22*

U.S. Cl. 362—31 **7 Claims**



1. In an automotive stereo device having an escutcheon portion at the front thereof, said escutcheon portion having wall means defining an opening for receiving a tape cassette or cartridge and having at least one operating member for controlling operation of the stereo device, an illumination mechanism comprising a light-transmissive plate made of a material having a high light transmissivity, said plate being mounted at the forward end of said escutcheon portion and having a cutout portion provided therein, at least one illuminating lamp provided behind said plate for illuminating said plate, said operating member being supported in front of said plate and said wall means being located in said cutout portion of said plate, said wall means being made of a material having a lower light transmissivity than that of said plate so that when said lamp is lit, said wall means will be of lower brightness than said plate.

4,322,781

UNIFORMLY LIGHTED PATTERN DISPLAY

Wesley R. Peterson, Boundbrook, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jul. 3, 1980, Ser. No. 165,584

Int. Cl.³ F21V *7/04*

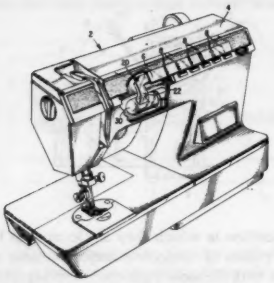
U.S. Cl. 362—32 **16 Claims**

1. A lighted display having:

(a) an external light source;

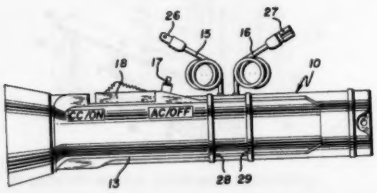
(b) an array of discrete reflective surfaces supported at varying distances from said light source; and

(c) a visual display associated with each said reflective surface and positioned for viewing by an operator;
wherein each of said reflective surfaces has a reflectivity



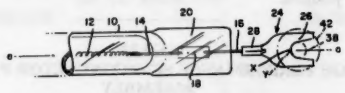
inversely proportional to the square of the distance of said surface from said light source so that the intensity of light reflected by each of said surfaces to their respective said associated visual displays may be substantially equal.

4,322,782
FLASHLIGHT
Kwan Wong, 42 Sunrise Ave., Grafton, Mass. 01519
Filed May 27, 1980, Ser. No. 153,337
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—183 **2 Claims**



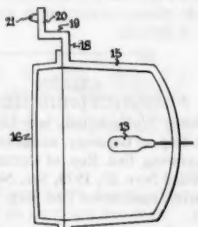
1. Flashlight, comprising:
(a) a low-voltage bulb,
(b) a low-voltage direct-current battery,
(c) a housing in which the bulb and battery are mounted,
(d) a silicon controlled rectifier mounted in the housing and having its anode connected to one side of the bulb and its cathode connected to one side of the battery,
(e) a first probe for contacting an electrical circuit to be tested, the probe being connected to the gate of the rectifier,
(f) a second probe for contacting the circuit to be tested, the probe being connected to the cathode of the rectifier,
(g) a normally-closed switch mounted on the exterior of the housing and connected electrically between the said cathode and the said one side of the battery,
(h) a second switch mounted on the exterior of the housing and connected on one side to the said gate and said first probe and connected on the other side to one side of the bulb, and
(i) a resistor connected between the said gate and the first probe, wherein the second switch when in open condition places the electrical circuitry in a VOLTAGE MODE in which anode and cathode are placed in series with the battery and bulb and voltage across the first and second probes causes current to flow from the battery through the bulb and through the rectifier to light the same, the current continuing to flow and light the bulb until the normally-closed switch is opened and wherein the electrical circuitry is placed in a CONTINUITY MODE by placing the second switch in closed condition.

4,322,783
LAMP WITH IMPROVED MOUNT
Ian C. Chappell, Lexington, and G. George Balog, Winchester, both of Ky., assignors to GTE Products Corporation, Stamford, Conn.
Filed Jul. 18, 1979, Ser. No. 58,719
Int. Cl.³ F21S *3/00*
U.S. Cl. 362—217 **9 Claims**



1. A lamp for mounting on an elongated holder having a pair of spaced apart mounting studs, said lamp comprising:
an elongated substantially tubular light-transmitting envelope having a seal at each end;
a pair of stiff lead-in wires respectively sealed through opposite ends of said envelope;
light generating means within said envelope, and means electrically connecting said light generating means to said lead-in wires; and
a pair of open-ended spade lugs each attached to the outer end of a respective one of said lead-in wires, each of said spade lugs having a substantially U-shaped portion with the open end facing away from said envelope and being laterally engageable with a respective one of said mounting studs, said U-shaped portions of both lugs substantially lying in the same plane, which plane is substantially parallel to a plane passing through the longitudinal axis of said envelope, and the distance between the U-shaped portions of said spade lugs and the distance between said mounting studs being substantially equal, with a tolerance of no more than 0.5 millimeters.

4,322,784
VEHICLE HEADLAMP HAVING AN INTEGRALLY MOLDED TRIM REFERENCE PLANE
Bruce E. Shanks, Chesterland, and Dan R. Campbell, South Euclid, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Oct. 16, 1979, Ser. No. 85,369
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—306 **10 Claims**



1. A vehicle headlamp comprising a light source sealed within and focused relative to a sealed polymer envelope having a reflector portion and a light transmissive lens effective for producing a light beam having an axis substantially parallel to the optical axis of said headlamp, and an integral

trim rim molded with and projecting radially outwardly from the exterior of said envelope, said rim having a forwardly facing surface predeterminedly positioned relative to said axis of said light beam and to said envelope and defining an accessible precisely located reference plane referentially characterizing said light beam and effective for use in predeterminedly aligning said light beam relative to the vehicle.

4,322,785

TRANSISTOR SWITCHING CIRCUIT

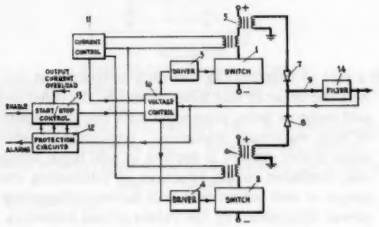
John D. Walker, Coventry, England, assignor to The General Electric Company Limited, London, England

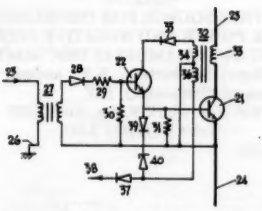
Filed May 12, 1980, Ser. No. 148,813

Claims priority, application United Kingdom, May 18, 1979, 17317/79

Int. Cl.³ H02P *13/22*

U.S. Cl. 363—21 **6 Claims**





1. A transistor switching circuit comprising a first transistor, a transformer having a first winding connected in an output path of said first transistor, a second winding connected in the collector-emitter circuit of a driver transistor in such a sense as to provide positive feedback between said output path and an input circuit to said first transistor when said driver transistor is conducting, and voltage-breakdown means connected in series with a third winding of said transformer in said input circuit to said first transistor to provide a reverse-bias current for said first transistor when said driver transistor ceases to conduct.

4,322,786

PULSE BURST REGULATED D.C. POWER SUPPLY APPARATUS AND METHOD

Harold J. Weber, Sherborn, Mass., assignor to Coulter Systems Corp., Bedford, Mass.

Filed Aug. 4, 1980, Ser. No. 174,804

Int. Cl.³ H02P *13/22*

U.S. Cl. 363—21 **31 Claims**

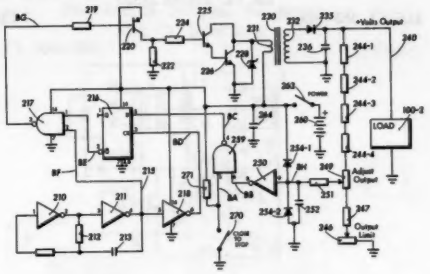
1. Power supply method whereby an electric potential produced thereform is effectively made constant through the combination of:

a. producing a continuum of alternating value electric pulses;

b. adapting said pulses into a train of substantially unipolar electric pulse values;

c. integrating said unipolar electric pulses into a substantially constant electric value;

d. interrupting said continuum of alternating pulses when said constant electric value integratively increases above a predetermined level;



e. recrudescing said continuum of alternating pulses when said constant electric value retrocedes substantially below said predetermined level, whereby further the active period of the first pulse comprising a train of successive pulses has a period at least equal to the corresponding period of any said successive pulse.

4,322,787

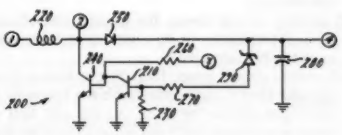
CLOSED LOOP LOW VOLTAGE UP-CONVERTER

Richard A. Kraus, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 30, 1980, Ser. No. 192,574

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—21 **3 Claims**



1. A DC voltage converter circuit comprising:

an inductor having two end terminals, a first one of which is connected to receive a first value of DC voltage;

transistor means connected to the second end terminal of said inductor for alternately providing a low resistance to ground path and a high resistance to ground state at a constant frequency and duty cycle;

said transistor means having a base connected to a source of constant frequency cyclical voltage to alternately provide said low resistance path and high resistance state;

diode means having its anode connected to said second end terminal of said inductor and its cathode connected to the output terminal of said converter circuit;

a zener diode means having a breakdown threshold voltage characteristic value at a predetermined value higher than said first value of DC voltage, and having its cathode connected to the electrical junction of said cathode of said diode means and said output terminal;

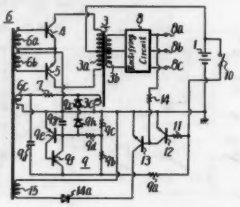
a capacitor means having one terminal connected to the electrical junction of said zener diode means cathode, diode means cathode and said output terminal and having an opposite terminal connected to ground, wherein said capacitor means functions to accumulate charge to a level limited by the avalanche value of said zener diode; and

means connected to the anode of said zener diode means for control limiting the amount of current through said transistor means when said transistor means is providing said low resistance path to ground.

4,322,788
INVERTER CIRCUIT

Tadao Yoshida, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 8, 1980, Ser. No. 147,579
Claims priority, application Japan, May 10, 1979, 54-57372
Int. Cl.³ H02M 3/335
U.S. Cl. 363—49 7 Claims



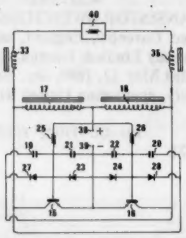
1. A control circuit for an inverter comprising:
(a) a DC voltage source having first and second terminals;
(b) an input transformer having a primary winding, a pair of secondary winding and a magnetic core;
(c) an output transformer having a primary winding, a secondary winding and a feedback winding;
(d) first and second transistors each having a control electrode, the main current paths of which are connected, through the primary winding of said output transformer, between the first and second terminals of said DC voltage source and the control electrodes of which are connected to the pair of secondary windings of said input transformer, respectively;
(e) circuit means for connecting the primary winding of said input transformer to the feedback winding of said output transformer;
(f) starting circuit means for putting one of said first and second transistors in its conductive state when said inverter is operated; and
(g) control circuit means including at least a shorting winding provided in connection with the magnetic core of said input transformer so as to cut off said first and second transistors during OFF operation of said inverter but with said DC voltage source remaining connected to the first and second transistors.

4,322,789
STATIC CONVERTER OF SYMMETRICAL TYPE

Henri Courier de Mere, Paris, France, assignor to Mere, Malleray & Cie, Mettray, France

Filed Jun. 26, 1980, Ser. No. 163,383
Claims priority, application France, Jun. 29, 1979, 79 16911; Jul. 19, 1979, 79 18661
Int. Cl.³ H02M 7/537
U.S. Cl. 363—133 11 Claims

1. A static converter for converting a d.c. input into an a.c. output having a desired frequency and power, comprising a symmetrical oscillator circuit including
(a) a pair of input terminals (38, 39) adapted for connection with a direct-current source;
(b) a pair of switching transistors (15, 16) each of which includes base, emitter, and collector electrodes, each of said emitter electrodes being connected with one of said input terminals, said collector electrodes being connected with a pair of output terminals (36, 37), respectively;
(c) a pair of inductors (17, 18) each connected at one end with the other of said input terminals, the other ends of said inductors being connected with the collector electrodes of said switching transistors, respectively;
(d) a pair of first capacitors (21, 22) each connected at one end with said one input terminal, the other ends of said first capacitors being connected with the base electrodes of said switching transistors, respectively;
(e) a pair of second capacitors (19, 20) each connected at one end with the base electrode of one of said switching transistors, respectively, each connected at the other end with the collector electrode of the other of said switching transistors, respectively; and

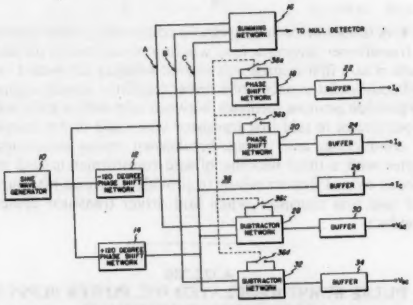


(f) a pair of resistors (25, 26) each connected at one end with the other of said input terminals, the other ends of said resistors being connected with the base electrodes of said switching transistors, respectively, whereby when direct current is applied to said input terminals, said oscillator circuit produces an alternating current output at said output terminals having a frequency and power determined by the values of said inductors, said first and second capacitors, and said resistors.

4,322,790
CALIBRATION SOURCE FOR INSTRUMENTS TO MEASURE POWER AND NEGATIVE SEQUENCE CURRENT OF DYNAMOELECTRIC MACHINES

John F. Wolfinger, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 26, 1979, Ser. No. 97,555
Int. Cl.³ H02M 5/00
U.S. Cl. 363—148 12 Claims



1. A signal source for calibrating instruments that measure power and negative sequence current of a multi-phase generator adapted to supply electrical power at a power generation frequency, said signal source comprising:
means for generating a first sine wave signal of frequency equal to said power generation frequency, said first sine wave being substantially free of harmonic content and of substantially constant amplitude;
means for deriving second and third sine wave signals from said first sine wave signal to provide a set of three sine wave signals separated in phase angle by substantially 120 degrees, said second and third sine wave signals having

frequency and amplitude characteristics of said first sine wave signal;

means for subtracting said first sine wave signal from said third sine wave signal to provide a first interphase voltage calibration signal;

means for subtracting said second sine wave signal from said third sine wave signal to provide a second interphase voltage calibration signal;

means for shifting the phase of said first sine wave signal by a preselected amount to provide a first phase current calibration signal;

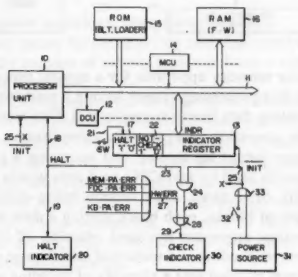
means for shifting the phase of said second sine wave signal by a preselected amount to provide a second phase current calibration signal; and

means for buffering said third sine wave signal to provide a third phase current calibration signal.

4,322,791
ERROR DISPLAY SYSTEMS

Takatoshi Ishii, Ohme, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 862,901, Dec. 21, 1977, abandoned. This application Dec. 3, 1979, Ser. No. 99,745
Claims priority, application Japan, Dec. 23, 1976, 51/154178
Int. Cl.³ G06F *11/22*
U.S. Cl. 364—200 **8 Claims**



1. An error display system for displaying an error state in a data processing system comprising:

means for generating an initializing signal in response to the activation of said data processing system, said initializing signal being set to a first signal value for a first time period and then to a second signal value for a second time period;

a read-only memory for storing a basic logic test program;

an indicator register including a not-check bit having a first value or a second value, said not-check bit being set to said first value in response to said initializing signal having said first signal value;

an error condition indicator;

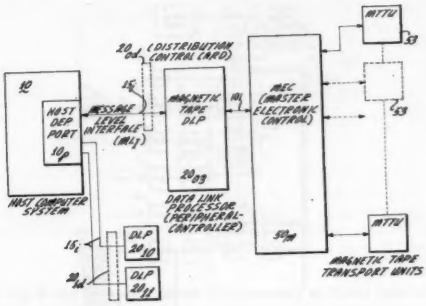
gating means connected to said error condition indicator, said indicator register, and said generating means, said gating means for controlling said indicator to indicate an error condition in response to the simultaneous occurrence of said first signal value of said initializing signal and said first value of said not-check bit; and

a processor unit for accessing and for executing said basic logic test program stored in said read-only memory in response to said first signal value of said initializing signal and for setting said not-check bit in said indicator register to said second value upon the successful execution of said basic logic test program to thereby extinguish said error condition indicator.

4,322,792
COMMON FRONT-END CONTROL FOR A PERIPHERAL CONTROLLER CONNECTED TO A COMPUTER

Kenneth W. Baun, El Toro, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 14, 1979, Ser. No. 103,451
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **12 Claims**



1. In a digital data processing system wherein the main host computer operates in network with a plurality of peripheral terminal units at remote stations and wherein I/O task commands are initiated by said main host system and wherein the operation and control of data transfer tasks is distributed among groups of peripheral controllers housed in base module units, and wherein each of said base module units houses a group of peripheral-controllers each of which is connected to a maintenance card which can perform diagnostics on each of said peripheral-controllers and also connected to a distribution control card which connects and disconnects selected peripheral-controllers to said main host computer, and wherein said peripheral-controllers are each formed of a common control circuit card and a peripheral dependent circuit card, the improvement wherein said common control circuit comprises:

(a) control store means to store micro-code word operators, said micro-code operators being addressed and fetched to control the transmission of, or reception of, data to/from a connected peripheral terminal or data to/from said host computer;

(b) means to address said control store means to access sequences of said micro-code word operators;

(c) RAM buffer storage means to temporarily store data being transferred between said host computer and said peripheral terminal;

(d) connection means to said peripheral dependent circuit board and to said distribution control card;

(e) means to set an address code on said common control circuit card to identify, to said host computer, a peripheral-controller; and wherein said host computer scans said distribution control card to select a connection to the peripheral-controller which matches the address transmitted by the said host computer, said address code identification being provided by alterable jumper connections on said common control circuit card.

4,322,793

COMMUNICATION CONTROLLER TRANSPARENTLY INTEGRATED INTO A HOST CPU

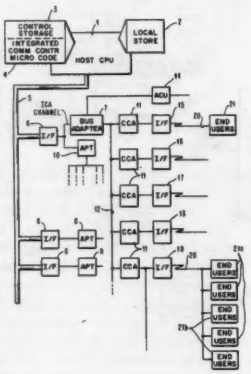
Kurt-Inge Andersson; Victor Gjerstad; Karl G. Gohl, all of Sverige; Lars Hallberg, Sollentuna; Bertil Norstedt, Lidingo, all of Sweden, and Helmut Schaal, Lustnau, Fed. Rep. of Germany, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,465

Claims priority, application Sweden, Jan. 2, 1979, 7900021

Int. Cl.³ G06F 9/22, 3/04

U.S. Cl. 364—200 **12 Claims**



1. In a data processing system having a central processing unit with main control storage and local storage, a high speed bus connected to said central processing unit and a plurality of high speed adapters connected to said high speed bus, at least one of said high speed adapters being a bus adapter, an integrated communication controller comprising communication control microcode resident in said main control storage for performing communication line control functions using said high speed bus.

4,322,794

BUS CONNECTION SYSTEM

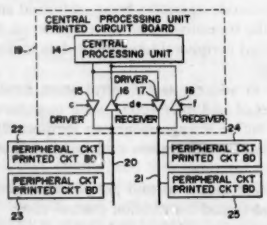
Mitsuo Kurakake, Kokubunji, Japan, assignor to Fujitsu Fanuc Ltd., Tokyo, Japan

Filed Jan. 4, 1980, Ser. No. 109,539

Claims priority, application Japan, Jan. 17, 1979, 54-4408

Int. Cl.³ G06F 1/00

U.S. Cl. 364—200 **6 Claims**



1. A bus connection system for a data processor unit which effects data transmission and reception between a central processing unit and first and second pluralities of peripheral circuits, comprising:

a first bus connected to each of the peripheral circuits comprising the first plurality of peripheral circuits;

a first driver and a first receiver for selectively connecting the central processing unit to said first bus;

a second bus connected to each of the peripheral circuits comprising the second plurality of peripheral circuits;

a second driver and a second receiver connected to the central processing unit and to said second bus, the central processing unit providing control signals for controlling the operation of the first and second drivers and the first and second receivers.

4,322,795

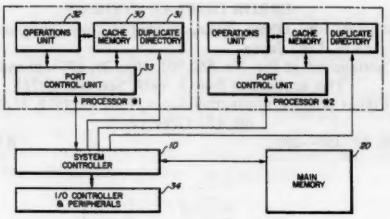
CACHE MEMORY UTILIZING SELECTIVE CLEARING AND LEAST RECENTLY USED UPDATING

Ronald E. Lange, and Richard J. Fisher, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jan. 24, 1980, Ser. No. 114,854

Int. Cl.³ G06F 9/30

U.S. Cl. 364—200 **10 Claims**



1. A cache memory apparatus for a central processing unit (CPU) in a data processing system having a main memory, said CPU requesting data words stored in said main memory when required for execution of a program, comprising:

(a.) storage means for storing and accessing a plurality of data words used by said CPU, said data words stored in a plurality of sections, each section being divided into a plurality of blocks, each block storing a data word;

(b.) directory apparatus having a plurality of levels, each level corresponding to a section of said storage means, and each level divided into a plurality of columns where each column corresponds to one block of said storage means, said directory apparatus including means for storing addresses identifying data words in main memory which are stored in said storage means, said directory apparatus including means for comparing said stored addresses to addresses of data words requested by said CPU, said directory apparatus further including means for generating match information when said requested data word is present in said first means thereby indicating on which level said data was found; and

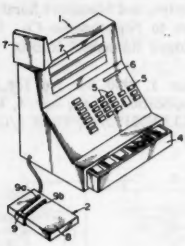
(c.) control apparatus including means for causing said requested data word to be supplied from said first means to said CPU when a match occurs, said control apparatus including means for causing said requested data word to be retrieved from said main memory, said control apparatus further including means for supplying said requested data word to said CPU, and storing said requested data word in said storage means, said control apparatus including means for directing that an address indexing said retrieved data word be stored in a least recently used (LRU) level of said directory apparatus, said control apparatus also including means for generating and storing update data on a new most recently used level when a match occurs, said control apparatus generating and storing means manipulating data bits identifying least recent usage of two predetermined levels.

4,322,796

REGISTER APPARATUS

Isamu Uchida, and Shinya Uchida, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1980, Ser. No. 133,920
Claims priority, application Japan, Mar. 27, 1979, 54/35979
Int. Cl.[3] G06F *15/30*
U.S. Cl. 364—405 4 Claims



1. A register apparatus, comprising:

key input means for successively entering commodity prices and the amount of money received from a customer by a keying operation;

note identifying means for identifying the denomination of a note to be identified as received from the customer;

arithmetic control means for adding said commodity prices and calculating the sum of said amount of money entered through said key input means and the amount of money identified by said note identifying means, said arithmetic control means comparing the sum of said commodity prices and said sum of money with each other to calculate the amount of change;

display means for displaying said sum of said commodity price, said sum of money received from the customer and said amount of said change; and

memory means for memorizing said sum of said commodity price, said sum of money received from the customer and said amount of said change;

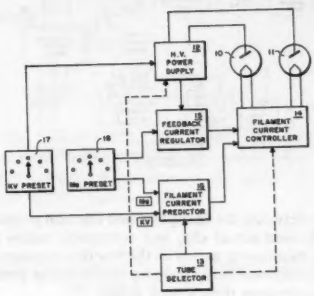
wherein said identifying means comprises a rectangular base plate for supporting the note to be identified, a first group of photo-electric sensors disposed on the base plate for generating first signals when blocked from light by the note, a second group of photo-electric sensors disposed on the base plate in opposition to said first group for generating second signals when blocked from light by the note, a light source disposed above the base plate for projecting light onto said first and second groups of photo-electric sensors, first note width detecting means for receiving said first signals and generating a third signal representing the width of the note, second note width detecting means for receiving said second signals and generating a fourth signal representing the width of the note, receiving means for receiving said third and fourth signals and responsive thereto for determining the kind of the note, and further detecting means for detecting the quantity of oblique orientation of the note in response to said first and second signals and for generating a fifth signal when the quantity of oblique orientation of the note exceeds a predetermined value.

4,322,797

X-RAY TUBE FILAMENT CURRENT PREDICTING CIRCUIT

Kenneth F. Lickel, Cheshire, and Roger Stonebank, Huntington, both of Conn., assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 897,731, Apr. 19, 1978, abandoned.
This application Oct. 22, 1979, Ser. No. 86,901
Int. Cl.[3] G06G *7/48*; H05G *1/34*
U.S. Cl. 364—414 4 Claims



1. An X-ray generator circuit for powering an X-ray tube of the type including means for supplying a predetermined anode voltage to said tube; means for supplying and controlling a filament current in said tube in response to a filament control signal; and feedback regulator means for adjusting said filament control signals in response to anode current flow in said tube to stabilize said anode current at a preset value; and further comprising, as an improvement;

a circuit for predicting the filament current necessary to produce said preset value of anode current in said tube, connected to receive an input voltage, KV, representative of the predetermined anode voltage and an input voltage, I_a, representative of the preset anode current and to calculate therefrom a filament control voltage I_f from a function substantially equal to

$$I_f = S\left[1.38 + kI_a 0.16 + \frac{1.5}{cI_a^{-0.667} + KV - 2.4}\right];$$

said circuit for predicting the filament current being connected to control the filament current during a period immediately following the application of anode voltage and when the feedback regulator means are ineffective for regulating the anode current.

4,322,798

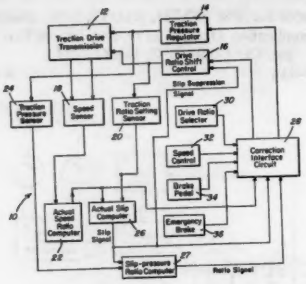
TRACTION PRESSURE CONTROL SYSTEM

Dan K. McCoin, El Paso, Tex., assignor to Bales-McCoin Research, Inc., El Paso, Tex.

Continuation-in-part of Ser. No. 878,664, Feb. 16, 1978, abandoned. This application Feb. 7, 1980, Ser. No. 119,466
Int. Cl.[3] F16H *37/06*; G06F *15/20*
U.S. Cl. 364—424 17 Claims

1. For a variable speed transmission having traction engaging drive elements, a drive ratio change mechanism for effecting relative displacement of said drive elements, and a traction pressure regulating device for controlling traction pressure between said drive elements, a system for varying the traction pressure to maintain optimum slip between said drive elements, comprising a plurality of sensing means operatively connected to said drive elements, the traction pressure regulating device and the drive ratio change mechanism for respectively sensing the speed of the drive elements, the traction pressure and the

drive ratio position of the mechanism, computer means connected to the sensing means for calculating actual slip between said drive elements from the sensed speed and the drive ratio position, rate calculating means connected to the traction pressure sensing means and the computer means for calculating



the ratio between the change in said traction pressure and the change in said actual slip, and correction means connecting said rate calculating means to the traction pressure regulating device for correctively changing said traction pressure when said ratio deviates from a peak value.

4,322,799

EXHAUST GAS RECIRCULATION VALVE CONTROL SYSTEM AND METHOD

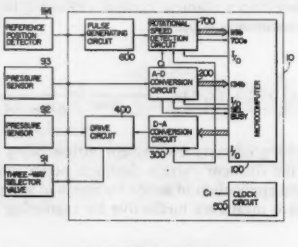
Tokio Kohama, Nishio; Takeshi Matsui, Aichi; Hisasi Kawai, Toyohashi; Akira Nishimatsu, Aichi; Toshikazu Ina, Okazaki; Hidetaka Nohira, and Kiyoshi Kobashi, both of Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed May 25, 1979, Ser. No. 42,344

Claims priority, application Japan, Jun. 16, 1978, 53-73447

Int. Cl.³ F02M *25/06;* G05B *15/02*

U.S. Cl. 364—431.06 **14 Claims**



1. An exhaust gas recirculation system comprising:

position detecting means for generating a reference position signal each time a predetermined rotational position of an engine is reached;

a first detector for detecting a negative pressure in an intake pipe of said engine to generate an analog negative pressure signal;

an exhaust gas recirculation control valve for controlling an amount of exhaust gas recirculated from an exhaust pipe of said engine to said intake pipe;

a second detector for detecting an opening ratio of said control valve to generate a valve opening ratio signal;

a rotational speed detection circuit responsive to said reference position signal to generate a digital engine rotational speed signal;

an analog to digital converter circuit for converting said negative pressure analog signal into a negative pressure digital signal in response to said reference position signal;

computing means for computing and generating an exhaust gas recirculation control signal in response to said negative pressure digital signal and said engine rotational speed digital signal; and

a drive circuit responsive to said valve opening ratio signal and said exhaust gas recirculation control signal to drive said recirculation control valve.

4,322,800

METHOD OF REDUCING FUEL CONSUMPTION RATE IN INTERNAL COMBUSTION ENGINES

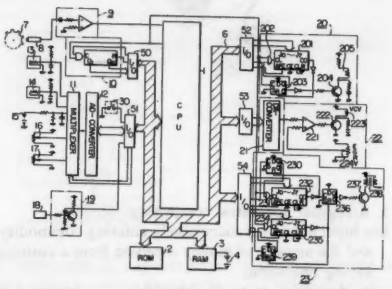
Takashi Hisegawa, Chiryu; Osamu Ito, Toyota; Nobuhito Hobo, Inuyama; Yoshihiko Tsuzuki, Toyota; Yutaka Suzuki, Nishio; Mikio Kumano, Kariya, and Masaharu Sumiyoshi, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Apr. 1, 1980, Ser. No. 136,331

Claims priority, application Japan, Apr. 4, 1979, 54-40730

Int. Cl.³ F02P *5/08;* F02B *5/02*

U.S. Cl. 364—431.05 **7 Claims**



1. An electronic control method for internal combustion engines comprising the steps of:

preliminarily storing in an electronic memory a plurality of values of an engine control variable which are arranged in a map with respect to a plurality of parameters indicative of operating conditions of an engine;

discriminating whether a normal operation or fuel consumption minimization operation of said engine is commanded;

discriminating whether said engine is in a steady operating condition;

operating said engine in accordance with one of said mapped engine control variable values corresponding to the values of said parameters indicative of a current operating condition of said engine when the result of said discriminating steps indicate that one of (1) a normal operation of said engine is commanded and (2) a minimization operation is commanded and said steady operating condition does not exist;

incrementally changing one of said mapped engine control variable values corresponding to the current operating condition of said engine and operating said engine in accordance with said changed engine control variable value when the result of said discriminating steps indicate that said fuel consumption minimization operation of said engine is commanded and said engine is operating in a steady condition;

detecting a change of one of said engine operating conditions caused by said change of said engine control variable value; and

replacing said one of said mapped engine control variable values by said changed engine control variable value when said change of said engine operation condition is in a direction to decrease the rate of fuel consumption so that said engine is controlled by said changed engine control

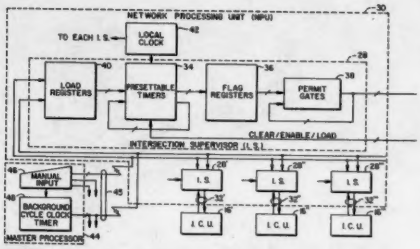
variable value when a normal operation is commanded next time.

4,322,801

METHOD FOR CONTROLLING TRAFFIC FLOW

Richard A. Williamson, Danville, and Derek Gitelson, Concord, both of Calif., assignors to Multisonics, Inc., Dublin, Calif.

Filed Mar. 18, 1980, Ser. No. 131,315
Int. Cl.³ G06F *15/48*
U.S. Cl. 364—436 **11 Claims**



10. A system for controlling intersection access at a plurality of intersections comprising:

a master processor means coupled to a plurality of intersection supervisor means for conveying a background cycle time and selected operating parameters to said intersection supervisor means;

a plurality of intersection supervisor means, each intersection supervisor means being operative to originate and to communicate permitted state information to an intersection control unit and being generally remote from said master processor means and from an intersection, each said intersection supervisor means being adapted to be coupled to an intersection control unit means at an intersection; and

an intersection control unit means for controlling signal face indicators at an intersection, said intersection control unit means having as input signals service request signals from sensors at said intersection and being operative to independently generate a local cycle of intersection access signals, said intersection control means being further operative to coordinate requests for intersection use which are generated as service request signals from said sensors with said permitted state information when said permitted state information information is communicated to said intersection control unit means, such that responses to requests for intersection use are substantially independent of said master processor means.

4,322,802

CONTROL APPARATUS FOR ADJUSTING THE POSITION OF A WORKPIECE

Clarence A. Lewis, Jr.; James E. Lewis, and Richard D. Lewis, all of R.D. #3 Box 115, Blairstown, N.J. 07825

Filed Apr. 10, 1980, Ser. No. 140,290
Int. Cl.³ G05D *3/00;* D06C *3/06*
U.S. Cl. 364—470 **31 Claims**

1. In a workpiece adjuster operable to adjust the position of a periodically indexed workpiece in response to a control signal, a control signal generating means comprising:

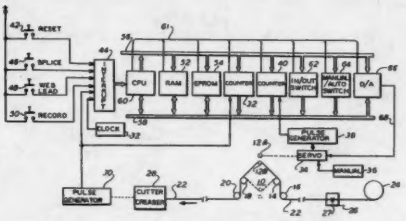
meter means for producing a run signal signifying the displacement of said workpiece;

sensing means for producing an adjust signal signifying the extent of adjustment of said workpiece by said adjuster;

manually operable means coupled to said adjuster for varying the position of said workpiece during an initial interindex interval;

memory means for storing at least one contemporaneous pair of values of said run and adjust signals during said initial interindex interval; and

automatic means for generating said control signal from index to index to cause the value of said adjust and run signals to



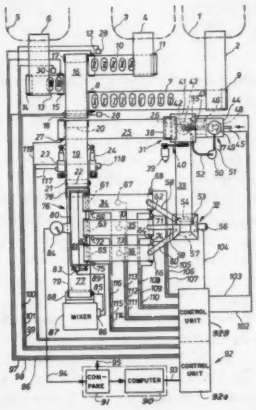
periodically correspond to said contemporaneous pair of values, whereby an initial manual adjustment made by visual observation controls the subsequent automatic operation of the control signal generating means.

4,322,803

METHOD OF AND DEVICE FOR FORMING RAW RUBBER CHARGES

Klaus Ullner, Brunswick, Fed. Rep. of Germany, assignor to Buehler-Miag GmbH, Brunswick, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,131
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1979, 2912937
Int. Cl.³ G06F *15/46;* G01G *13/24*
U.S. Cl. 364—473 **11 Claims**



1. A method of forming predetermined charges of at least one sort of rubber to be discharged into a mixer, during the manufacture of rubber articles such as tires, comprising the steps of:

(a) preparing and keeping in a ready to feed condition a series of relatively large bales of rubber for each sort used in the process;

(b) preparing and keeping in a ready to feed condition a plurality of smaller pieces of rubber of respective sorts;

(c) separating from said series of large bales a batch the total weight of which approaches a required weight for one charge;

(d) transferring the separated batch onto a scale;

(e) determining the weight difference between the actual weight of the batch and the desired weight of the latter;

(f) balancing the weight difference by the addition of a

requisite number of said smaller pieces of the corresponding sort of rubber;

(g) repeating the steps (c) through (f) with the remaining sorts; and

(h) feeding the completed charge into the mixer.

4,322,804

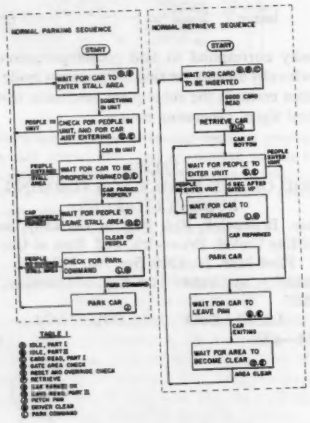
STORAGE CONVEYOR OPERATION SYSTEM AND SURVEILLANCE SYSTEM

Edward N. Evans, Long Beach, Calif., assignor to Park Mobile, Inc., New York, N.Y.

Filed Sep. 19, 1979, Ser. No. 76,924

Int. Cl.³ G06F *15/48*; G08G *1/14*; E04H *6/06*

U.S. Cl. 364—478 **16 Claims**



9. A method for operating a vehicle storage conveyor using a programmable digital computer system, the storage conveyor having a plurality of pans to hold the vehicles, an enclosed loading station having an entrance therein, and means for moving the pans to and from a loading area at the loading station, said method comprising:

detecting and distinguishing between the presence of a small moving object such as a person and a large moving object such as a vehicle going through the entrance into the enclosed loading station;

detecting the presence of the large object on the conveyor pan;

detecting the departure of at least one small object from the enclosed loading station; and

only after at least one small object has departed from the enclosed loading station, conveying the vehicle loaded conveyor pan away from the loading area and conveying an empty pan to the loading area.

4,322,805

ELECTRICAL SURVEY METHOD AND APPARATUS

Joseph W. Rog, Medina, Ohio; Karl W. Nicholas, Roselle, and Charles G. Waits, Hanover Park, both of Ill., assignors to Harco Corporation, Franklin Park, Ill.

Filed Mar. 5, 1979, Ser. No. 17,180

Int. Cl.³ G01V *3/00*; G01R *31/02*

U.S. Cl. 364—481 **102 Claims**

1. An apparatus for making electrical surveys of structures contained in an electrolyte, comprising:

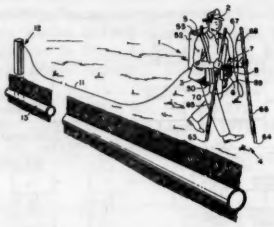
electrode means contactible with the electrolyte proximate the structure,

wire means for electrically connecting the apparatus with the structure at a reference location thereon, said wire means comprising a supply of wire electrically connectable at one end to a test connection of such structure,

logging means for automatically electrically sensing and storing the potential difference between said electrode means and said wire means at a plurality of locations along such structure, and

support means for supporting said supply and said logging means for transport along such structure,

said support means comprising a distance measuring unit means for containing said supply, and distance measuring



means in said distance measuring unit means for measuring the length of wire distributed from said distance measuring unit means as an indication of the distance travelled by said distance measuring unit means along such structure, and interval counter means responsive to said distance measuring means for producing interval signals at selected intervals and, therefore, at predetermined locations along such structure, and coupling means for coupling such interval signals to control said logging means to sense and store potential difference information at such locations.

4,322,806

FREQUENCY RESPONSE ANALYZER

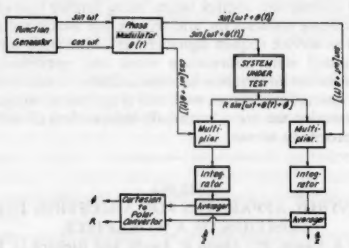
Henrick Allison, 11 Ulster Rd., Floreat Park, Western Australia, Australia (6014)

Filed Sep. 17, 1979, Ser. No. 76,353

Claims priority, application Australia, Sep. 18, 1978, PD5995

Int. Cl.³ G01R *23/00*

U.S. Cl. 364—485 **5 Claims**



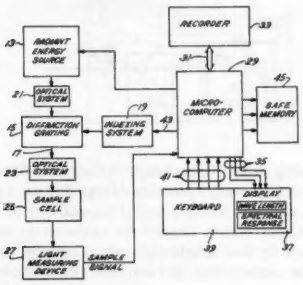
1. A frequency response analyzer having a signal generator for producing a test signal for input into a system under test, a first reference signal and a second reference signal; said first reference signal being identical to said test signal and said second reference signal being identical to said reference signal but being 90 degrees out of phase therewith; a phase-modulator for simultaneously incorporating a phase shift function which is variable in time into said test signal and into said first and said second reference signals; a sensor for detecting an output signal from the system under test; a divider for dividing the output signal from the system under test sensed by said sensor into two channels; a multiplier in each of said channels, one of said multipliers multiplying the output signal by said first reference signal and the other of said multipliers multiplying the

output signal by said second reference signal; an integrator in each channel for integrating the output of the respective of said multipliers; an averager in each channel for averaging the outputs of the respective integrator; and a cartesian to polar converter for conversion of the averaged signal of each channel to a polar form, and an output means for each channel.

4,322,807
SAFE MEMORY SYSTEM FOR A SPECTROPHOTOMETER

Morteza M. Chamran, Elmhurst, Ill.; Larkin B. Scott, Fort Worth, Tex., and Paul B. Williams, Lombard, Ill., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 7, 1980, Ser. No. 128,028
Int. Cl.³ G01J 3/42
U.S. Cl. 364—498 **9 Claims**



1. A spectrophotometer comprising monochromator means for providing monochromatic light at a sequence of wavelengths over a predetermined spectral range; a sample cell; a light measuring device; means for directing said monochromatic light through said sample cell and onto said light measuring device;

recorder means for recording an indication of the spectral response of said measuring device;

keyboard means operator actuable for generating operating parameters, said keyboard means selectively operable for generating a safe memory SET signal;

safe memory means for storing a plurality of sets of operating parameters;

microcomputer means for communicating with said keyboard means and said memory means; and for controlling the operation of a spectrophotometer analysis including control of said monochromator means in accordance with the parameters of one of said sets, and responsive to a said safe memory SET signal for addressing one of said sets of operating instructions in said safe memory means for controlling operation of the spectrophotometer in accordance with said set addressed, and for storing operating parameters generated by said keyboard means in said safe memory means;

power supply means for receiving A.C. power and transforming said A.C. power to D.C. power for powering said microcomputer means;

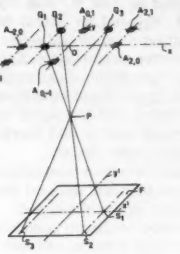
an ON/OFF switch manually actuable for supplying said D.C. power from said power supply means to said microcomputer means and for discontinuing supplying of said D.C. power to said microcomputer means; and

D.C. battery means connected to said safe memory means for powering said safe memory means when said D.C. power is discontinued supplying said microcomputer means.

4,322,808
CODING AND DECODING ARTIFACT-FREE IMAGES OF OBJECTS

Hermann Weiss, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 23, 1980, Ser. No. 152,974
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1978, 2816634
Int. Cl.³ G06G 9/00, 7/19
U.S. Cl. 364—515 **5 Claims**



1. A method of coding and decoding an image of an object using a large plurality of point-like radiation sources, comprising the steps:

making a first recorded image of the object on a first recording medium using a first radiation source distribution;

making a second recorded image of the object on a second recording medium using a second radiation source distribution; the second radiation source distribution being the spatial autocorrelation function of the first radiation source distribution except that said second radiation source distribution does not have any radiation source at the origin of said autocorrelation function;

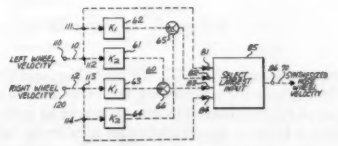
in a first decoding step, correlating the first recorded image with a first point image function of the first radiation source distribution; and

in a second decoding step, subtracting the second recorded image from the first recorded image, as correlated with the point image function.

4,322,809
METHOD AND APPARATUS FOR GENERATING NOSE WHEEL SPEED SIGNALS

Garrett H. DeVlieg, and Andrew M. Valaas, both of Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 18, 1980, Ser. No. 141,441
Int. Cl.³ B60T 8/02
U.S. Cl. 364—565 **2 Claims**



1. A converter circuit for generating nose wheel speed signals from main landing gear wheel speed signals by selecting the greater of:

V_L;

V_R;

$K_1V_L - K_2V_R$; and,

$K_1V_R - K_2V_L$ where V_L and V_R are the signals representative of left and right main gear wheel velocities, and K_1 and K_2 are fixed constants, said converter comprising:

means for generating the said V_L and V_R signals;

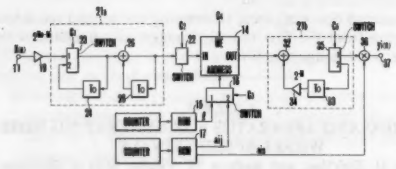
a first converter input terminal;
a second converter input terminal;
a converter output has a plurality of terminals;
a select largest input circuit having an output terminal coupled to said converter output terminals, said select largest input circuit having first, second, third, and fourth input terminals;
a first summing circuit having a plurality of input terminals coupled to said V_L and V_R signals for generating $K_1V_L-K_2V_R$, and an output terminal coupled to said second input terminal of said select largest input circuit; a second summing circuit having a plurality of input terminals coupled to said V_L and V_R signals for generating $K_1V_R-K_2V_L$, and an output terminal coupled to said third input terminal of said select largest input circuit;
a first conductive circuit coupled said V_L signal to said first converter input terminal and to said first input terminal of said select largest input circuit; and a second conductive circuit coupled said V_R signal to said second converter input terminal and to said fourth input terminal of said select largest input circuit;
a first conductive circuit connection between said first converter input terminal and said first input terminal of said select largest input circuit; and
a second conductive circuit connection between said second converter input terminal and said fourth input terminal of said select largest input circuit.

4,322,810

DIGITAL FILTERS WITH REDUCED MULTIPLIER CIRCUITRY

Kenji Nakayama, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 9, 1980, Ser. No. 148,092
Claims priority, application Japan, May 16, 1979, 54-59895
Int. Cl.³ G06F *15/31*
U.S. Cl. 364—724 **2 Claims**



1. A digital filter in which the relation between an input data x(n) and an output data Y(n) is:

$$Y(n) = \sum_{i=0}^{N-1} a_{n-i}x(n-i),$$

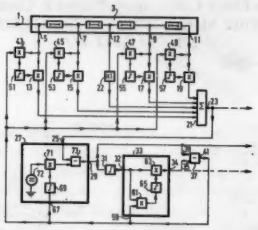
where n is an integer and a_{n-i} is a multiplier, said filter comprising first means for multiplying the input data x(n) by all the integers l ranging from 0 to 2^M-1, where M is the bit number of either a binary coded weight data a_l or its partial bit a_{lj} (j=1, 2, . . . , K); a first storage for storing an output lx(n) of the first means in an address of l; a selector circuit for selecting the integer l or either the weight data a_l or its partial bit a_{lj} and supplying the selection result to the first storage as an address signal; second means for reading outputs from the first storage by an address signal of the weight data a_l or its K partial bits a_{lj} in the sequence i=N−1, N−2, . . . , 0, accumulating and thereafter shifting the outputs to the lower order by the bit number of the address signal, and multiplying the resulting outputs by the sign of a_l to produce $a_ix(n)$; third means including a second storage for reading a data stored in an address corresponding to i, adding the read data and the output $a_ix(n)$, (i=N−2, N−3, . . . , 0) of the second means and storing the sum in an address corresponding to i+1; and fourth means for adding an output $a_{N-1}x(n)$ corresponding to i=N−1 of the second means and a data stored in an address corresponding to N−1 of the second storage to produce a filter output.

4,322,811

CLAMPING CIRCUIT FOR AN ADAPTIVE FILTER

Johannes O. Voorman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 10, 1980, Ser. No. 129,049
Claims priority, application Netherlands, Mar. 16, 1979, 7902094
Int. Cl.³ H03H *21/00*; H03G *11/00*
U.S. Cl. 364—825 **2 Claims**



1. A clamping circuit for an adaptive filter, said filter including a delay circuit having a plurality of taps thereto, a plurality of amplitude control circuits coupled respectively to said plurality of taps, correlation circuits for respectively providing control signals for said amplitude control circuits, means for combining the outputs from said amplitude control circuits for providing a corrected output signal of said filter, and a difference determining circuit having inputs coupled respectively to the corrected signal output of the filter and to a threshold circuit, which provides a reference signal, and an output for providing an error signal which, in turn, is applied to said correlation circuits, characterized in that said clamping circuit has an input connected to the corrected signal output of the filter and an output coupled respectively to said threshold circuit and to one of said inputs of said difference determining circuit, said clamping circuit comprising a control circuit, for correcting the level of the corrected output signal of the filter, having a first input connected to the clamping circuit input, a second input for receiving a level control signal and an output connected to the clamping circuit output, and an integrator having an input for receiving said error signal and an output, for providing said level control signal, coupled to said second input of said control circuit.

4,322,812

DIGITAL DATA PROCESSOR PROVIDING FOR MONITORING, CHANGING AND LOADING OF RAM INSTRUCTION DATA

Sheila G. Davis, Los Angeles, and Robert E. Franks, San Gabriel, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 16, 1979, Ser. No. 85,388
Int. Cl.³ G06F *9/22, 13/06*
U.S. Cl. 364—900 **6 Claims**

1. In a digital data processing system, the combination comprising:
a plurality of selectively addressable RAMs containing instruction data for use in controlling data processing operations in said system;
addressing means for said RAMs;

a RAM input-output register for each RAM comprised of a plurality of multi-bit storage devices;

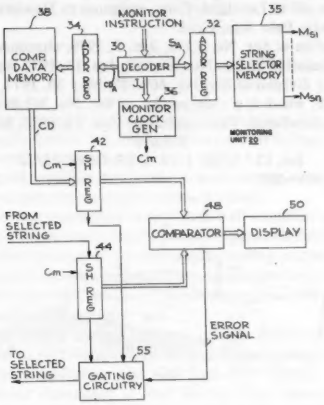
each RAM being operative in response to a read signal to read out instruction data from a RAM location selected by said addressing means into its respective RAM input-output register;

each RAM also being operative in response to a write signal to write instruction data contained in its respective RAM input-output register into a RAM location selected by said addressing means;

controllable gating means for selectively reconfiguring the connections to the storage devices of each input-output register so as to form a selectable string; and

monitoring and loading means;

said monitoring and loading means including means for selectively providing an address to said addressing means and a read signal or a write signal to a selected RAM;



said monitoring and loading means also including means for selectively generating one of a plurality of string selection signals which are applied to said gating means along with a predetermined plurality of clock signals which are applied to the storage devices of a selected string for causing the bits thereof to be propagated to said monitoring and loading means and then returned to their respective storage devices;

said monitoring and loading means further including means for monitoring the storage device bits applied thereto from a selected string and for selectively changing particular storage device bits applied thereto corresponding to different instruction data which it is desired to be written into a selected RAM;

said monitoring and loading means additionally including means for applying a write signal to a selected RAM after return of different instruction data to its respective RAM input-output register storage devices.

4,322,813

IMPROVED DATA LOG RETRIEVAL SYSTEM

Guy J. Howard; James H. Hubbard, both of Boulder; Walter C. McCrumb, Berthoud, and Paul R. Spivey, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 861,761, Dec. 19, 1977, abandoned. This application Mar. 10, 1980, Ser. No. 128,686

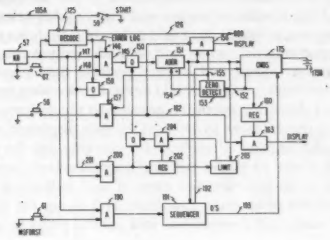
Int. Cl.³ G06F *11/30*

U.S. Cl. 364—900 **2 Claims**

1. A data logging device for accumulating operational information representing the functional performance of an associated machine, comprising in combination:

memory means for storing said information in locations therein, said information being separated into categories representing operations data, operational error data, and machine error data, each of said categories being divided into groups, each group having a unique identifier assigned thereto and a total representing the number of occurrences of a particular associated event, and each group being further divided into identifiable elements, each element having a total representing an item related to said group event;

means for successively scanning the contents of locations in said memory means, which locations store information representing the total number of occurrences of a particular event associated with a particular identified group;



means responsive to said scanning means for displaying a group identifier when its group total is greater than zero;

first operator-activated means for displaying when activated the contents of the location in said memory means containing the group total associated with the displayed group identifier;

second operator-activated means for selecting an element related to said displayed group identifier; and

means responsive to said second operator-activated means for displaying the contents of the location in said memory means containing the total of said selected element.

4,322,814

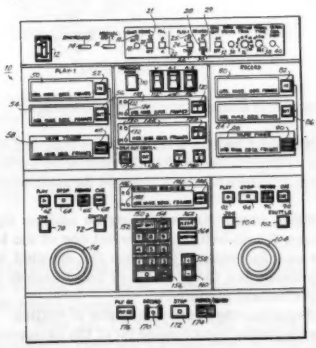
ERROR DETECTION FOR USE IN EDITING APPARATUS

William A. Menezes, Mountain View, and Douglas D. Kuper, Campbell, both of Calif., assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 11, 1980, Ser. No. 139,747

Int. Cl.³ G06F *1/00*; H04N *5/785*

U.S. Cl. 364—900 **25 Claims**



1. Editing apparatus for use with playback and recording devices wherein different signals on a first record medium are transferred to a second record medium, the relative positions of said first and second record media being represented by

record medium position data, said apparatus comprising a console having a plurality of display registers for displaying record medium position data; a plurality of register selector means associated with corresponding ones of said display registers, each being operable to select its associated display register; a plurality of register indicators associated with respective ones of said display registers; a plurality of signal selector means, each being operable to select particular ones of the signals reproduced from said first medium to be recorded on said second medium when a selected one of said media reaches a position represented by the position data displayed in a selected display register; a plurality of signal select indicators associated with respective ones of said signal selector means; control switch means operable to initiate edit operations; central processing means responsive to the selected operation of said signal selector means and said register selector means for assigning at least one of said different signals for transfer to said second medium when said second medium reaches a relative position represented by the position data displayed in a selected display register, said central processing means including error detecting means responsive to the operation of said control switch means to detect if the data displayed in said selected display register is enabling for carrying out the edit operation and, if not, to inhibit said edit operation from being carried out and to actuate selected ones of said indicators to apprise an operator of an error condition; and means for communicating between said console and said central processing means.

4,322,815

HIERARCHICAL DATA STORAGE SYSTEM

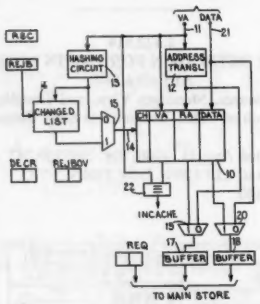
Philip Broughton, Bolton, England, assignor to International Computers Limited, London, England

Filed Apr. 21, 1980, Ser. No. 141,784

Claims priority, application United Kingdom, May 9, 1979, 16021/79

Int. Cl.³ G11C *9/06*; G06F *13/00*

U.S. Cl. 364—900 **7 Claims**



1. A hierarchical data storage system comprising

(a) a first store;

(b) a second store having a faster access time but a smaller number of data locations than the first store, each location of the second store having a changed bit associated with it; and

(c) addressing means for producing an address signal for addressing the second store to select one of the locations therein and for writing data into the selected location, thereby modifying the contents of that location; wherein the improvement comprises:

(d) a further store organised as a queue of entries;

(e) means for testing the changed bit of the location selected by said addressing means and, if the changed bit is not set, writing data into the selected location and writing said address signal into the further store at the end of said queue;

(f) counting means for counting the number of entries in said queue and producing an indication signal when the queue is full;

(g) means responsive to said indication signal for automatically reading out the address signal at the head of said queue; and

(h) means for utilising the address signal read out from the head of said queue for addressing the second store, to read out a previously modified item of data for transfer to the first store.

4,322,816

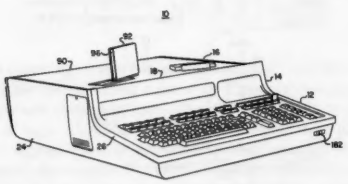
PROGRAMMABLE CALCULATOR HAVING STRUCTURE FOR CONTROLLING AN X-Y PLOTTER

Richard M. Spangler; Eugene V. Burmeister; Frank E. Cada; Wayne F. Covington; Chris J. Christopher; Myles A. Judd; Freddie W. Wenninger; Robert E. Watson, and Kent W. Simcoe, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 1,111, Jan. 5, 1979, abandoned, which is a continuation of Ser. No. 758,962, Jan. 13, 1977, abandoned, which is a division of Ser. No. 469,727, May 30, 1974, Pat. No. 4,012,725, which is a continuation of Ser. No. 269,899, Jul. 7, 1972, abandoned. This application Jun. 12, 1980, Ser. No. 158,675

Int. Cl.³ G06F *3/13, 3/02*; G06K *15/22*

U.S. Cl. 364—900 **8 Claims**



1. An electronic X-Y plotter system comprising:

keyboard input means for entering alphameric information, including commands, into the plotter system;

X-Y plotter means for graphically plotting selected alphameric information upon a single sheet of record medium;

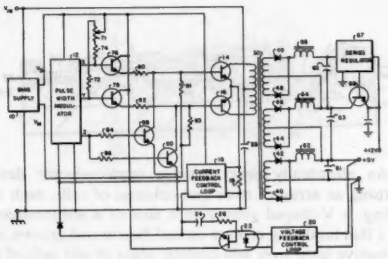
the keyboard input means being operative for entering commands for controlling operation of the X-Y plotter means, including a first plotter command specifying an X coordinate and a Y coordinate defining an initial origin on said single sheet of record medium with respect to which information is to be subsequently plotted, and a second plotter command specifying an X coordinate and a Y coordinate defining a secondary origin on the same sheet of record medium with respect to which the same information is to be subsequently plotted as was plotted following entry of said first plotter command;

the plotter system further comprising processing means coupled to said keyboard input means and X-Y plotter means, the processing means being operative for executing said first plotter command entered into the plotter system from said keyboard input means and for then causing all information subsequently plotted on the single sheet of record medium to be plotted with respect to the initial origin that is defined by the X and Y coordinates specified in that first plotter command, said processing means being further operative for executing said second plotter command, entered from said keyboard input means at any time following entry of said first plotter command, and for then causing said same information subsequently plotted on the same sheet of record medium to be plotted with respect to the secondary origin on that sheet of record medium that is defined by the X and Y coordinates specified in said second plotter command.

4,322,817
SWITCHING REGULATED PULSE WIDTH MODULATED PUSH-PULL CONVERTER

Karl H. Kuster, Glendale Heights, Ill., assignor to Gte Automatic Electric Labs Inc., Northlake, Ill.

Filed Dec. 29, 1980, Ser. No. 220,667
Int. Cl.³ H02M 3/335
U.S. Cl. 363—26 13 Claims



1. A direct current to direct current converter for use in a power supply system including a direct current voltage source, said converter comprising:

a push-pull amplifier connected to said voltage source, operated to generate periodic primary pulses;

a transformer connected to said push-pull amplifier operated in response to said primary pulses to generate first, second and third groups of periodically occurring output pulses;

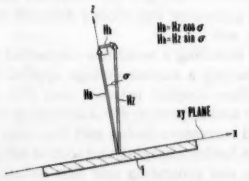
a first output circuit connected to said transformer, operated to filter said first group of output pulses into a first direct-current voltage output; and

a second output circuit comprising first filter means connected to said transformer, second filter means connected to said transformer and said first filter means, a series regulator connected to said second filter means and an output transistor connected to said series regulator and said first filter means, said first filter means operated in response to said second group of output pulses to supply collector current to said output transistor, said second filter means operated to filter said third output pulses and said series regulator operated in response to said filtered third group of output pulses to regulate base current of said output transistor; said output transistor operated in response to said regulated base current and said filtered collector current to generate a second direct current voltage output.

4,322,818
MAGNETIC BUBBLE MEMORY DEVICE

Minoru Hiroshima, and Hirofumi Ohta, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 12, 1979, Ser. No. 56,995
Claims priority, application Japan, Jul. 14, 1978, 53-85118
Int. Cl.³ G11C 19/08
U.S. Cl. 365—27 4 Claims



1. In a magnetic bubble memory device comprising:

a magnetic bubble memory chip having opposing major surfaces and incorporating a plurality of basic elements of different types;

a rotating magnetic field generating circuit provided with a group of coils wound around said magnetic bubble memory chip and an exciting source for exciting said group of coils to generate a rotating magnetic field parallel to the major surface of said magnetic bubble memory chip;

a bias magnetic field generating circuit supplying to said magnetic bubble memory chip a fixed bias magnetic field which crosses with the major surface of said chip;

an operating pulse current generating circuit supplying operating pulses to said magnetic bubble memory chip for generation, transfer and replication of magnetic bubbles; and

means for supporting an assembly comprised of said magnetic bubble memory chip and the group of coils wound around said chip in such a way that a component of said bias magnetic field which is parallel to the major surface coincides with the start/stop direction of said rotating magnetic field;

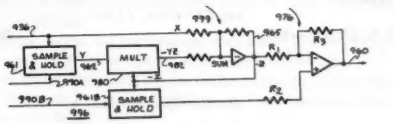
the improvement wherein the orientation of the longitudinal axis of at least one predetermined basic element built in said magnetic bubble memory chip is placed in substantial coincidence with the phase at which the rotating magnetic field is oriented for its start/stop direction, such that said component of bias magnetic field which is parallel to the major surface has a polarity which adds to the magnitude of said rotating magnetic field in said start/stop direction to make the effective value of said rotating magnetic field in said start/stop direction the sum of the absolute values of said magnitude and said component; and

means for applying said pulse current to generate, transfer or replicate bubbles substantially coincident with the phase at which said rotating magnetic field is orientated to its start/stop direction.

4,322,819
MEMORY SYSTEM HAVING SERVO COMPENSATION

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Continuation-in-part of Ser. No. 490,816, Jul. 22, 1974, Pat. No. 4,209,853, Ser. No. 522,559, Nov. 11, 1974, Pat. No. 4,209,852, Ser. No. 550,231, Feb. 14, 1975, Pat. No. 4,209,843, Ser. No. 812,285, Jul. 1, 1977, and Ser. No. 844,765, Oct. 25, 1977. This application Mar. 23, 1978, Ser. No. 889,301
Int. Cl.³ G11C 27/00, 7/00
U.S. Cl. 365—45 35 Claims



29. A memory system comprising:

a memory for storing signals;

a reference circuit for generating a reference signal;

a comparator for generating a comparison signal in response to a comparison of the stored signals from said memory and the reference signal from said reference circuit.

4,322,820
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Kazuhiro Toyoda, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 23, 1980, Ser. No. 171,276
Claims priority, application Japan, Jul. 26, 1979, 54/95347
Int. Cl.³ G11C 11/40
U.S. Cl. 365—154 9 Claims

1. A semiconductor integrated circuit device, connected to receive an input data signal and an inverted write enable signal,

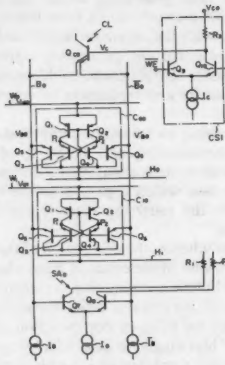
a high or low level of said inverted write enable signal defining a read or write mode respectively, said device comprising:

a plurality of word lines;

a plurality of hold lines;

a plurality of pairs of bit lines;

a plurality of memory cells of integrated injection logic,



each connected to one of said word lines, to one of said hold lines, and to one pair of said pairs of bit lines; and

means for selectively altering the potential of the lower potential bit line of a selected pair of bit lines in response to the read or write mode, so that the potential of said lower potential bit line during the read mode is higher than during the write mode.

4,322,821

MEMORY CELL FOR A STATIC MEMORY AND STATIC MEMORY COMPRISING SUCH A CELL

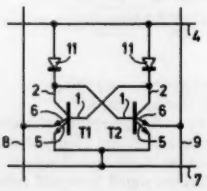
Jan Lohstroh, Eindhoven, Netherlands, and Cornelis M. Hart, Sunnyvale, Calif., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,357

Claims priority, application Netherlands, Dec. 22, 1978, 7812463

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—155 **20 Claims**



1. A memory cell for use in an integrated static memory circuit, which comprises a semiconductor body having two transistors with cross-coupled base and collector regions, and a diode load element connected to each collector region, characterized in that each diode load element comprises a p-n junction diode of which at least one of the anode and cathode regions comprises polycrystalline silicon, and each collector region is connected to that region of its associated diode load element which is of the same conductivity type as the collector region.

4,322,822

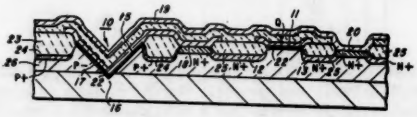
HIGH DENSITY VMOS ELECTRICALLY PROGRAMMABLE ROM

Roger K. McPherson, 12707 Murphy Rd., Lot 68, Stafford, Tex. 77477

Filed Jan. 2, 1979, Ser. No. 626

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—182 **12 Claims**



1. An electrically programmable semiconductor device comprising an array of rows and columns of cells, each cell including: a V-shaped groove in a face of a semiconductor body, a thin insulating coating on said face in said groove, and a conductive layer over said coating; some of said cells of the device having an electrical short through said coating at the apex of the groove and other of said cells having no such electrical short.

4,322,823

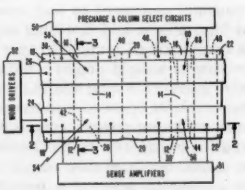
STORAGE SYSTEM HAVING BILATERAL FIELD EFFECT TRANSISTOR PERSONALIZATION

Wilbur D. Pricer, Burlington, and James E. Selleck, Middlebury, both of Vt., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,636

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—184 **15 Claims**



10. A read only memory comprising;

an array of field effect transistors, each transistor having first and second diffusions of a first conductivity type and a gate electrode and means for providing different voltage thresholds between said gate electrode and said first diffusion and said gate electrode and said second diffusion at selected transistors of said array,

first means including bit sense lines for charging said first diffusion to a first voltage having a polarity and magnitude sufficient to eliminate the highest of said voltage thresholds between said gate electrode and said first diffusion and for grounding said second diffusion during a first time period, and

second means including a word line connected to said gate electrodes having a second voltage applied thereto and sense amplifiers coupled between said first and second diffusions of said transistors for determining current flow through said transistors during said first time period,

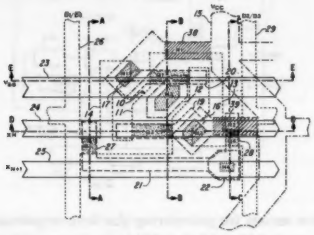
said first means further charging said second diffusion to said first voltage and grounding said first diffusion during a second time period,

said second means further determining current flow through said transistors during said second time period.

4,322,824
STATIC RANDOM ACCESS MEMORY WITH MERGED BIT LINES

James D. Allan, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 13, 1979, Ser. No. 93,776
Int. Cl.[3] G11C *11/40*
U.S. Cl. 365—185 17 Claims



1. A static random access memory comprising: an array of a plurality of adjacent rows and columns of memory cells, said memory cells formed in a semiconductor integrated circuit having a semiconductor substrate and each of said memory cells including:

a pair of driver transistors formed in said substrate at one face thereof;

a pair of load devices;

first conductive means at said one face connecting each of said driver transistors in series with one of said load devices; and

second conductive means at said one face cross-connecting an output electrode of each of said driver transistors to a central electrode of the other of said driver transistors;

the array including:

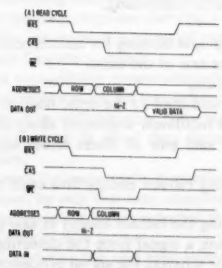
a plurality of word lines for addressing said rows of memory cells; and

a plurality of bit lines for addressing said columns of memory cells consisting of a single bit line disposed between each pair of said adjacent columns in the array of memory cells, the cells in each pair of adjacent columns sharing said single bit line.

4,322,825
FLEXIBLE HIDDEN REFRESH MEMORY CIRCUIT

Akira Nagami, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,333
Claims priority, application Japan, Apr. 4, 1979, 54-40671
Int. Cl.[3] G11C *7/00*
U.S. Cl. 365—203 5 Claims

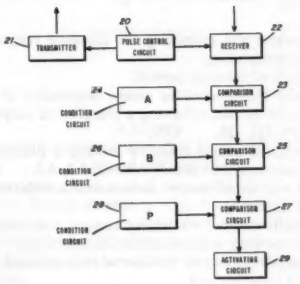


5. In a dynamic random access memory including row strobe input means for receiving a row strobe signal, column strobe input means for receiving a column strobe signal, a memory matrix arranged in rows and columns, first control means for selecting rows of said memory matrix controlled by said row strobe signal, timing means responsive to said column strobe for producing a column timing signal from a first junction point and second control means responsive to said column timing signal for controlling columns of said memory matrix, the improvement comprising a second junction point, precharge means for operatively precharging said second junction point within a period of inactive level of said row strobe signal, first discharge means responsive to an inactive level of said column strobe signal for operatively discharging electric charge at said second junction point and second discharge means responsive to electric charge at said second junction point for discharging electric charge at said first junction point.

4,322,826
METHOD AND SYSTEM FOR DISTINGUISHING BETWEEN DISPLACING TARGETS AND A SURFACE OF WATER

Per-Arne Resjö, Blommedal, and Hans P. Loid, Holmenbacken, both of Sweden, assignors to Forenade Fabriksverken, Eskilstuna, Sweden

Continuation-in-part of Ser. No. 946,404, Sep. 27, 1978, abandoned. This application Nov. 20, 1979, Ser. No. 96,215
Claims priority, application Sweden, Sep. 27, 1977, 7710781
Int. Cl.[3] G01S *15/04, 15/88*
U.S. Cl. 367—96 3 Claims



3. Arrangement for detecting objects in a body of water extending to at least a predetermined distance from the water surface, comprising:

transmitter means for transmitting successive pulses toward the water surface to obtain echo pulses therefrom;

receiver means for receiving said echo pulses and measuring the distances to the water surface for each successive said pulse received;

first comparison circuit means connected to the receiver means for comparing the apparent change in the distance to the water surface between said successive pulses with a first predetermined value representing the maximum change attributable to a wave;

second comparison circuit means connected to said first comparison circuit means for comparing, when the said apparent change in the distance to the water surface between successive pulses is greater than said first predetermined value indicating a target, an apparent difference between the distance to the water surface as measured for an earlier pulse and the distance to the target, with a second predetermined value representing a desired depth of targets;

third comparison circuit means connected to the second comparison circuit means for counting, when said apparent difference is greater than the said second predetermined value, the number of times the apparent differences for successive pulses exceeds said second predetermined

value, and for comparing said counted number with a third predetermined value; and

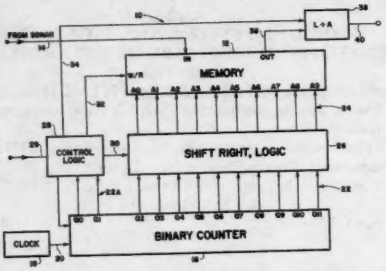
an activating circuit connected to the third comparison circuit means, said activating circuit being activated when the counted number exceeds said third predetermined value.

4,322,827

RANGE EXPANDER FOR SONAR SYSTEM

Ronald G. Weber, Tulsa, Okla., assignor to Lowrance Electronics, Inc., Tulsa, Okla.

Filed Sep. 22, 1980, Ser. No. 189,047
Int. Cl.³ G01S *15/08*
U.S. Cl. 367—99 **8 Claims**



1. Apparatus for extending the distance range of a sonar apparatus, comprising;

(a) a clock of selected period;

(b) digital binary counter means responsive to said clock; said counter means having a plurality of output terminals Q0, Q1, Q2, Q3, . . . QN;

(c) a random access memory having a plurality of input address control terminals A0, A1, A2, A3, . . . AN; a signal input and signal output means, and a read/write control input terminal;

(d) a multi-channel switching means, whereby a selected single memory address control terminal can be connected alternately to one or another of two selected Q terminals of said counter; and

(e) means to synchronously control both said read/write operations of said memory, and said switching of said switching means.

4,322,828

SEISMIC AIRCRAFT MANEUVER CLASSIFIER

Dave Hoff, Brooklyn Park, and Peter H. Vansloun, Hopkins, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 9, 1981, Ser. No. 223,627
Int. Cl.³ G01S *11/00*
U.S. Cl. 367—118 **8 Claims**

1. Apparatus for classifying the activity of a jet aircraft, comprising:

a geophone proximate an airfield used by jet aircraft for generating a signal indicative of the existence of a jet aircraft;

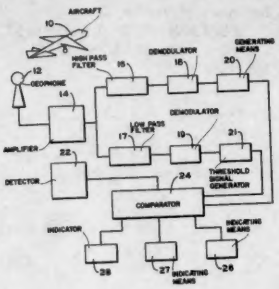
amplifier means for enhancing said signal;

a low pass filter means for receiving said signal and passing only that portion having a frequency less than about 30 Hz;

a high band pass filter means for receiving said signal and passing only that portion having a frequency from about 90 to 120 Hz;

demodulator means for receiving said low pass signal to produce a low pass envelope, and for receiving said high band pass signal to produce a high band pass envelope;

threshold signal generating means for receiving said low pass envelope and said high band pass envelope, and generating a signal when an envelope reaches a predetermined threshold; and



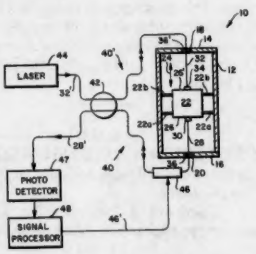
comparator means for comparing the time sequence of signals generated by said threshold signal generating means to determine the activity of said jet aircraft.

4,322,829

FIBER OPTIC ACCELEROMETER AND METHOD OF MEASURING INERTIAL FORCE

Charles M. Davis, Jr., McLean, Va., and Thomas G. Giallorenzi, Washington, D.C., assignors to Dynamic Systems, Inc., McLean, Va.

Filed Sep. 11, 1980, Ser. No. 186,383
Int. Cl.³ G01V *1/18*; G01D *5/26*
U.S. Cl. 367—178 **9 Claims**



1. An accelerometer comprising;

a housing;

a mass mounted in said housing for limited rectilinear movement along one axis of the mass;

a pair of optic fibers;

means attaching said mass to the optic fiber so that the pair of fibers are in rectilinear alignment along said one axis;

means attaching said pair of fibers under tension to said housing;

means for directing radiant energy into each of the pair of fibers;

means for detecting the radiant energy in said pair of fibers;

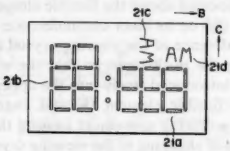
means for directing a signal from the detecting means to a signal processor wherein the signal processor detects any axial signal resulting in a phase difference in the rays traveling in said pair of fibers, which phase difference is directly proportional to the force applied to the pair of fibers by movement of the mass along said one axis.

4,322,830

ELECTRONIC TIMEPIECE HAVING AN ALARM UNIT

Eiji Nakazawa, Akishima, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1979, Ser. No. 96,239
Claims priority, application Japan, Nov. 25, 1978, 53/145779
Int. Cl.[3] G04C *21/00*
U.S. Cl. 368—29 4 Claims



1. an electronic timepiece having an alarm unit and means for generating periodic reference signals, comprising:

time counting means for counting said reference signals to generate time data, including a per day signal;

display means coupled to said time counting means for displaying the time data generated by said time counting means;

date counting means coupled to said time counting means for counting the per day signals which are generated by said time counting means to generate at least date data;

memory means for storing desired date data;

coincidence detection means coupled to said memory means and to said date counting means for detecting coincidence between the desired date data stored in said memory means and the date data generated by said date counting means and for producing a coincidence signal during an alarm day on which both the desired date data and the generated date data coincide; and

display direction converting means coupled to said coincidence detection means and to said display means, and including means responsive to said coincidence signal outputted from said coincidence detection means for changing the viewing direction of said display means.

4,322,831

PROGRAMMED DIGITAL SECONDARY CLOCK

Ronald H. Peterson, Hubbardston, Mass., assignor to Simplex Time Recorder Co., Gardner, Mass.

Filed Jun. 6, 1978, Ser. No. 913,141
Int. Cl.[3] G04C *11/00, 13/00*
U.S. Cl. 368—46 17 Claims

1. A programmed digital secondary clock, comprising:

real time counting means adapted for selective connection to a reference frequency line carrying a reference frequency signal for maintaining a count of real time based on the reference frequency signal,

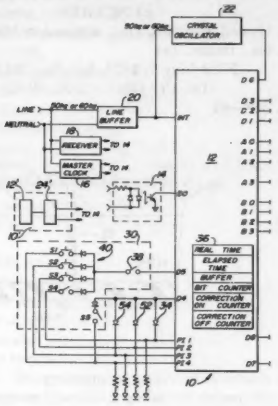
serial data transmitting means adapted for connection to a slave secondary clock for transmitting the real time count maintained in said real time counting means to the slave secondary clock in serial data format at said reference frequency,

display means for numerically displaying the real time count maintained by said real time counting means,

serial data receiving means adapted to receive a real time count in serial data format,

means for updating the real time count maintained by said real time counting means with the real time count received in serial data format, and

correction means adapted for selective connection to a master clock or to an electronic receiver for correcting the real time count maintained by said real time counting means in response to the width of a correction pulse signal



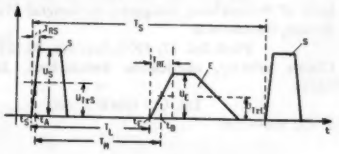
produced by said master clock or a correction signal produced by said electric clock receiver.

4,322,832

METHOD AND ARRANGEMENT FOR PULSE SPACING MEASUREMENT

Wilfried Sartorius, Steinen, Fed. Rep. of Germany, assignor to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

Filed Jun. 11, 1980, Ser. No. 158,444
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2923963
Int. Cl.[3] G04C *11/02;* G04F *8/00;* G01S *13/00*
U.S. Cl. 368—47 13 Claims

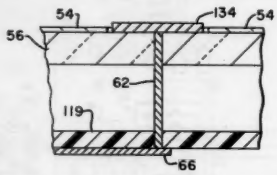


1. Method for pulse spacing measurement with periodic pulse pairs, in particular in pulse radar, by measuring the time interval between the instants of the coincidence of a pulse edge with a trigger level which is set in a predetermined ratio to the peak value of the pulse, characterised in that the pulse pairs are sampled by the sampling method with the aid of sampling pulses whose recurrence period is smaller by a predetermined small time difference than the recurrence period of the pulse pairs, that for each time-transformed pulse obtained by the sampling the peak value is determined and a trigger level having a predetermined ratio to the peak value is set, and that the time interval between the instants of the coincidence of the trailing phase edge of each time-transformed pulse and the associated trigger level is measured.

4,322,833
ELECTRONIC TIMEPIECE HAVING CONDUCTIVE FACE COVER FOR IMPLEMENTING DISPLAY FUNCTION

Jack E. Husted, Garland, Tex., assignor to Micro Display Systems, Inc., Dallas, Tex.

Filed May 9, 1977, Ser. No. 794,742
Int. Cl.³ G04C *17/00, 19/00*
U.S. Cl. 368—69 3 Claims

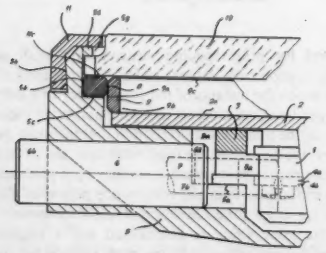


1. An electrical timepiece comprising:
enclosure means including a case and an optically transmissive, non-conductive face cover supported on the case;
a first conductive electrode disposed on an exterior portion of the enclosure means.
a second conductive electrode including a conductive stud projecting through the face cover, the first and second conductive electrodes being electrically isolated with respect to each other;
timekeeping means enclosed within the enclosure means including an electro-optical display, means for generating a control signal, and electrical actuating means connected to the electro-optical display having an input for receiving the control signal and an output connected to actuate the display in response to the control signal; and,
the first electrode being electrically connected to the generating means to receive the control signal and the second electrode being electrically connected to the input of the actuating means, whereby the display is selectively actuated by simultaneously contacting the first and second electrodes with an electrical coupling medium disposed outside of the enclosure means.

4,322,834
WATCH CASE WITH INTERENGAGING FLANGED GLASS AND FLANGED CASING RING

Walter Schaeren, Bienne, and Claude Ray, La Chaux-de-Fonds, both of Switzerland, assignors to General Watch Co. Ltd., Bienne, Switzerland

Filed Jul. 17, 1979, Ser. No. 58,157
Claims priority, application Switzerland, Jul. 17, 1978, 7702/78
Int. Cl.³ G04B *37/00*
U.S. Cl. 368—296 14 Claims

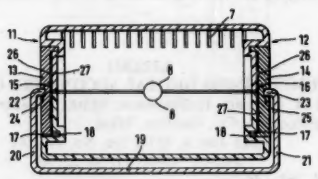


1. A watch case (5) with an upper opening for fastening a rigid viewing crystal (10) and provided with at least one flexible element (8), a dial (2) rigidly fixed to a movement (1), the dial (2) being supported by a confining ring (3) resting on a bearing surface (5*a*) on the inside of the case characterized in that:
(a) the upper opening includes an inner groove bounded by a lower shoulder (5*c*) which serves as a lower support for the flexible element (8), an inner wall (5*b*) which serves as a lateral support for the flexible element (8) and an upper flange (5*d*) located above the flexible element (8) forming projections (5*f*) on its inner circumference;
(b) the circumference of the viewing crystal (10) has means of engaging the projections so that the viewing crystal (10) can be introduced freely into the upper opening, rest against the flexible element (8) and engage the upper opening by a driving movement causing the engagement of the means of engaging of the viewing crystal (10) on the projections (5*f*) without significantly deforming the viewing crystal (10);
(c) a collar (9), having an outer edge (9*a*), rests on the circumference of the dial (2); and in that
(d) the outer edge (9*a*) is in contact with the flexible element (8), so that the collar (9) is subjected to lateral pressure by the flexible element (8), the flexible element (8) fixing the position of the collar (9) and, consequently, the position of the movement (1) by resting the collar (9) on the dial (1).

4,322,835
HOUSING ASSEMBLY FOR INSTRUMENTS

Heinz Ernst, Frankfurt am Main, and Gerhard Wesner, Steinbach, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 188,743
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1979, 2937206
Int. Cl.³ G04B *37/00*
U.S. Cl. 368—317 14 Claims



1. A housing assembly for measuring instruments comprising a plurality of detachable casing parts mutually connectable to form an assembled casing, one of said casing parts comprising a viewing window for the measuring instrument, said assembled casing being bounded by two opposite walls in spaced relation to each other, portions of said casing parts defining said opposite walls, a separate intermediate element mounted on and corresponding to each of said opposite walls, the respective intermediate element corresponding to each respective opposite wall being in interfitting relation to its corresponding wall, and a resilient stirrup clamp including oppositely disposed portions which each respectively engage a corresponding one of said separate intermediate elements to thus place each intermediate element and the corresponding one of said opposite walls with which the respective intermediate element is in interfitted relation under an elastic pressure which holds said casing in assembled relation.

4,322,836

HIGH DENSITY RECORDING SYSTEM USING SIDE-BY SIDE INFORMATION AND SERVO TRACKS

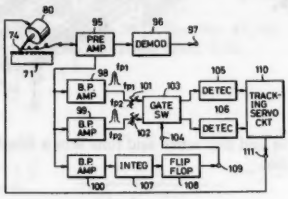
Hisao Kinjo, and Keiji Ozawa, both of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation of Ser. No. 785,095, Apr. 6, 1977. This application Oct. 25, 1979, Ser. No. 87,974

Claims priority, application Japan, Apr. 8, 1976, 51-38809; Oct. 26, 1976, 51-127767

Int. Cl.[3] G11B *21/06*

U.S. Cl. 369—43 2 Claims



1. An information signal reproducing system comprising: means for reproducing an information signal and a plurality of reference signals recorded on a recording disc, said information signal being recorded on information signal tracks on the recording disc, each of said reference signals being recorded on said reference signal tracks, there being a plurality of different kinds of reference signals, one kind of said reference signals appearing during every other complete rotation of the recording disc, another kind of said reference signals appearing during the intervening complete rotation of the disc; means for separating said reference signals from the signals reproduced by said reproducing means; detection means for detecting the separated reference signals; gating means for selecting one kind of said reference signals during every other complete rotation of said disc, said gating means selecting the other kind of said reference signals during the intervening complete rotation of said disc; and means for controlling tracking in response to the gated output of said detection means so that said reproducing means traces the information signal tracks on the recording disc.

4,322,837

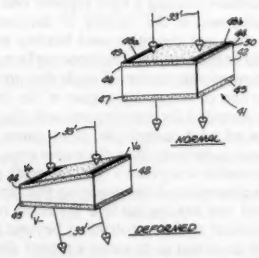
DITHERED CENTER TRACKING SYSTEM

Lee Mickleson, and Eric V. Olson, both of Long Beach, Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Filed Aug. 27, 1979, Ser. No. 70,062

Int. Cl.[3] G11B *7/00*

U.S. Cl. 369—44 5 Claims



1. Apparatus for retrieving information stored in a plurality of optically readable information tracks formed in an information storage medium, said apparatus comprising:

a light source for producing a reading beam of light radiation;

optical means for defining an optical path between said light source and the information tracks carried by the storage medium, and said optical means including at least a radial tracking mirror, a piezoelectric dither structure, and a beam splitting means;

said radial tracking mirror being employed for moving said reading beam in a radial direction with respect to said information track;

said reading beam being modulated by and reflected by said information track to retrace at least a portion of said path;

sensing means for receiving said reflected beam of radiation from said information track;

said beam splitting means being positioned along said portion of said path common to said reading beam and said reflected beam for directing said reflected beam out of the path of said reading beam and toward said sensing means;

oscillator apparatus for generating a periodic electrical drive signal;

said piezoelectric structure having at least a first surface and a second surface, a first transmissive resistive film formed over said first surface, a second transmissive resistive film formed over said second surface, at least first and second spaced electrodes attached to said first resistive film;

said read beam impinges upon said first resistive film intermediate said first and second electrodes, and said read beam passes through said crystal and said first and second resistive films;

said first and second electrodes being responsive to said electrical drive signal from said oscillator apparatus for creating a linear electrical field gradient across one surface of said crystal which deforms said crystal asymmetrically in a radial direction relative to the information track to cause the read beam to deflect laterally across the information track;

tracking servo means responsive both to the output of said oscillator apparatus and to the output of said sensing means for comparing the phase relationship between said dither signal generated by said oscillator and said dither signal as reflected from said disc and detected by said sensing means and for generating a tracking error signal; and

said tracking error signal being applied to said tracking mirror for maintaining the reading beam aligned about the center of the track throughout its radial excursions.

4,322,838

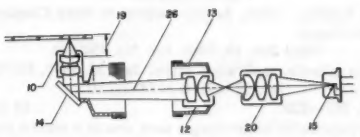
DYNAMIC FOCUS ADJUSTMENT FOR TRANSMISSIVE OR REFLECTIVE OPTICAL DISC MEMORY SYSTEMS

Hans D. Neumann, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 11, 1980, Ser. No. 120,589

Int. Cl.[3] G11B *7/00*

U.S. Cl. 369—45 6 Claims



1. A focus control system for maintaining focus of a spot of light on an optical recording medium, comprising:

a source of a beam of light;

moving means movably positioned adjacent the surface of said optical recording medium for performing translational motion across a portion of said optical recording medium;

a focussing lens mounted on said moving means, for directing said light beam to the surface of said optical recording medium to form a focussed spot of light thereon; and

focus error correcting means operating in response to an error signal representing any change of focus of said spot of light on said surface to cause refocussing of said spot on said

surface, said focus error correcting means being positioned remote from said moving means.

4,322,839

METHOD AND APPARATUS FOR RECORDING AND REPRODUCING INFORMATION ON AND FROM AN OPTICAL DISK

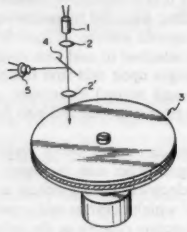
Tadaoki Yamashita; Takeo Ohta; Nobuo Akahira; Tatsushi Nakamura, and Mutsuo Takenaga, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Aug. 24, 1979, Ser. No. 69,570

Claims priority, application Japan, Aug. 25, 1978, 53-104037

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—122 **15 Claims**



1. An apparatus for optically recording on and reproducing information from an optical disk including a recording layer having a thickness from 0.06 to 0.3 micron, and an optical absorption factor from 50 to 95 percent of incident radiation, comprising:

(a) a semiconductor laser for emitting a laser beam which is modulated with an input recording signal;

(b) an optical system for focussing the laser beam emitted from said semiconductor laser;

(c) means for rotating said optical disk at such a speed that said laser beam changes an optical characteristic of said recording layer without geometrically deforming said layer; and

(d) a photodetector responsive to a laser beam reflected at or transmitted through said recording layer.

4,322,840

ARM DRIVING DEVICE IN LINEAR TRACKING PICKUP APPARATUS

Satoshi Kusaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 16, 1980, Ser. No. 159,624

Claims priority, application Japan, Jun. 22, 1979, 54-79348

Int. Cl.³ G11B *3/38, 21/10*

U.S. Cl. 369—220 **14 Claims**

1. Apparatus for controlling a tone arm in a record playing device of the linear tracking pickup type, comprising:

guide means;

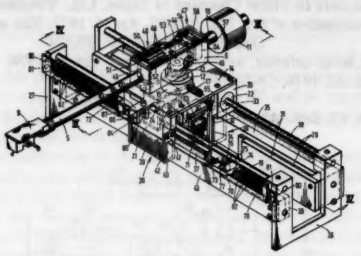
carriage means slidably mounted on said guide means;

a linear drive motor for linearly driving said carriage means along said guide means in the horizontal direction with respect to a record disc;

a pickup assembly mounted on said carriage means and including a supporting mechanism for supporting said tone arm for horizontal movement with respect to said record disc;

detecting means for detecting an inclination of said carriage means with respect to said record disc and for generating an output in response thereto; and

means for supplying said output to said linear drive motor so as to stop the carriage means at a horizontal position with



respect to said disc when said tone arm is lifted from said record disc.

4,322,841

PLAYBACK INSTRUMENT FOR AN INFORMATION CARRIER DISC

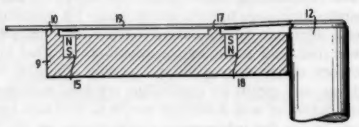
Heinz Borchard, Nortorf, and Horst Redlich, Berlin, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs G.m.b.H, Frankfurt am Main, Fed. Rep. of Germany

Filed May 16, 1979, Ser. No. 39,572

Claims priority, application Fed. Rep. of Germany, May 16, 1978, 2821296

Int. Cl.³ G11B *3/60*

U.S. Cl. 369—270 **11 Claims**



1. In a playback instrument for a record disc provided with a center region and with recorded information located exclusively in a second region enclosing the center region, the instrument including a turntable for supporting the disc to be played, on which the disc is centered by means of a central bore, the improvement comprising means defining two annular, concentrically disposed, radially spaced flat bearing surfaces mounted on said turntable for the disc with the portion of said turntable between said surfaces being recessed below said surfaces, said surfaces forming a rigid support, one said bearing surface being disposed in the vicinity of the location of the center of such disc and the other said bearing surface being disposed radially to the outside of said one surface at a distance from the location of the center of such disc to contact the radial outer portion of the center region of the disc, and disc holding means provided for exerting on such disc a magnetic attracting force of such magnitude as to cause the disc to contact said bearing surfaces over the entire area thereof, and wherein said turntable comprises a disc centering pin having a conical surface dimensioned for engaging the central bore of the disc and said one bearing surface is spaced radially from said pin, said conical surface protruding beyond said bearing surfaces to such an extent as to cause a record disc placed on said turntable to be slightly curved, when the disc is in contact with said bearing surfaces, in the region of the disc which is radially enclosed by said one bearing surface to produce a spring force in the disc which acts to center the disc on said centering pin.

5. A record disc for playback on the instrument defined in claim 4, said disc comprising magnetic means located to cooperate with the magnets disposed in the turntable.

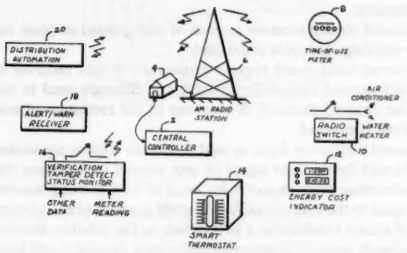
6. A disc as defined in claim 5 wherein said magnetic members are of soft magnetic material.

7. A disc as defined in claim 5 or 6 wherein said magnetic means are constituted by two concentric rings at locations coinciding with the locations of the magnets disposed in the turntable.

4,322,842
BROADCAST SYSTEM FOR DISTRIBUTION AUTOMATION AND REMOTE METERING

Louis Martinez, Carson, Calif., assignor to Altran Electronics, Harbor City, Calif.

Filed Oct. 23, 1979, Ser. No. 87,543
Int. Cl.³ H04J *6/00, 9/00*
U.S. Cl. 370—11 **22 Claims**



13. A radio communication system for selectively addressing and controlling a plurality of remotely located apparatus comprising in combination:

(A) central controller means adapted to generate address & control tone code selection signals for transmission to a local AM radio broadcast station,

(B) a local AM radio broadcast station adapted to generate tone coded signals derived from its master oscillator by frequency divider means and adapted to receive and broadcast the tone code selections received from said broadcasted radio frequency carrier at small angle subaudible rates that do not suppress and spread its normally unused residual carrier power by more than a predetermined amount nor interfere with normal transmissions of said radio station that are broadcasted simultaneously,

(C) a plurality of remotely located addressable tone coded radio receivers controlling a plurality of external apparatus and tuned to detect and phase-lock to residual carrier frequency of said broadcast station to thereby demodulate and decode said tone coded address & control signals and selectively respond thereto to control said apparatus.

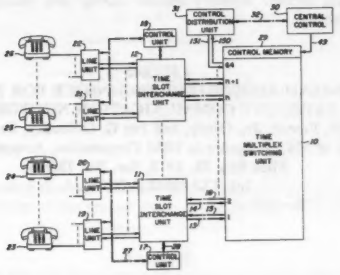
4,322,843
CONTROL INFORMATION COMMUNICATION ARRANGEMENT FOR A TIME DIVISION SWITCHING SYSTEM

Hugo J. Beuscher; John H. Davis, both of Glen Ellyn; Maurice N. Ransom, Naperville, and Robert B. Walford, Lombard, all of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1979, Ser. No. 106,689
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—63 **22 Claims**

1. A control information communication arrangement for a switching system comprising a switching means having a plurality of input ports and a plurality of output ports for completing communication paths between said input ports and said output ports in time slots of fixed duration and a central control for controlling said switching system characterized in that said control information communication arrangement further comprises;

a plurality of control units each connected to predetermined ones of said input ports for transmitting control messages comprising an address portion defining one of said control units and for transmitting control messages comprising an address portion defining said central control and each of said control units being connected to predetermined ones of said output ports for receiving control messages; and wherein

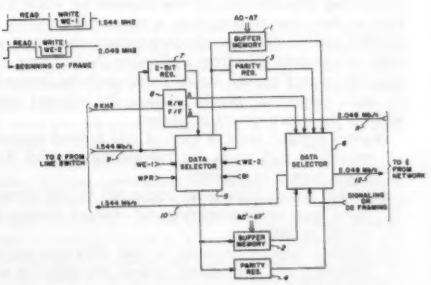


said switching means further comprises control distribution means for receiving said control messages and for transmitting each control message comprising an address portion defining one of said control units, to one of said output ports connected to the control unit defined by the address portion of that control message and for transmitting to said central control each control message comprising an address portion defining said central control.

4,322,844
TRANSMITTER-RECEIVER SYNCHRONIZER

Frank Fellinger, Delaware; Michael C. Willett, Clinton, both of Ohio, and Haresh C. Jotwani, Longwood, Fla., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 77,346, Sep. 20, 1979, abandoned. This application Dec. 10, 1980, Ser. No. 215,048
Int. Cl.³ H04J *3/00*
U.S. Cl. 370—84 **12 Claims**



1. Apparatus for providing bidirectional rate conversion between frames of data having a first rate and a first format and frames of data having a second rate and a second format; said apparatus comprising:

first and second buffer memory means;

means for storing a first frame of data at said first rate in said first memory means during a first frame interval;

means for storing a second frame of data at said second rate in said second memory means during said first frame interval;

means for reading said stored first frame of data stored in

said first memory means at said second rate during a second frame interval;

means for reading said stored second frame of data stored in said second memory means at said first rate during said second frame interval;

means for storing a third frame of data at said second rate in said first memory means during said second frame interval; and

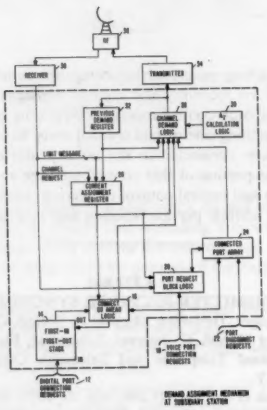
means for storing a fourth frame of data at said first rate in said second memory means during said second frame interval.

4,322,845

DEMAND ASSIGNMENT TECHNIQUE FOR TDMA SATELLITE COMMUNICATION NETWORK

John W. Fennel, Jr., Olney, and Jan G. Oblonsky, Brookeville, both of Md., assignors to IBM Corporation, Armonk, N.Y.

Filed Sep. 28, 1979, Ser. No. 79,928
Int. Cl.³ H04J *3/06, 3/16*
U.S. Cl. 370—104 **8 Claims**



6. In a TDMA satellite communication system including a satellite transponder, a reference station and a plurality of ground stations, each ground station having input ports for connecting asynchronous service requests for voice transmission or data transmission from a terrestrial network to the satellite transponder, the reference station assigning a subplurality of channels (N_I) from a plurality (N_T) of time division channels to each ground station based upon the demand made by each respective ground station for channel capacity, wherein the improvement comprises:

channel demand logic in each of said ground stations connected to said ports, for calculating channel demands based upon port requests;

a ground station transmitter connected to said channel demand logic for transmitting said channel demand to said reference station;

a reference station receiver in said reference station for receiving said transmitted channel demands for each of said ground stations;

a channel demand array in said reference station having an input connected to said receiver, for storing the present channel demands of all of said ground stations;

a present channel assignment array in said reference station having an input connected to said receiver, for storing the present channel assignments of all of said ground stations;

a first comparator in said reference station having inputs connected to said channel demand array and to said present channel assignment array for outputting an enabling signal when the channel demand from any ground station is greater than its corresponding channel assignment;

an accumulator having an input connected to said first comparator for summing all of said channel demands;

a second comparator having inputs connected to said accumulator and to a register storing said value N_T, for outputting a first output enabling signal when the sum of said channel demands is less than said value N_T and outputting a second output enabling signal when said sum of channel demands is greater than said value N_T;

a first AND gate having said output from said first comparator as a first input and said first output signal of said second comparator as a second input, for providing the logical AND function of its inputs as an output signal;

send limit logic connected to the output of said first AND gate for sending a limit command to said ground stations in response to said first enabling signal;

a reference station transmitter connected to said send limit logic, for transmitting said limit command to said ground stations;

a ground station receiver at each of said ground stations, for receiving said limit command;

a current assignment register connected to said receiver in said ground station for limiting the channels used to the last channel demand, in response to the reception of said limit command;

channel allocation logic in said reference station connected to said first output signal of said second comparator, for allocating new channels for each of said ground stations equal to the corresponding channel demand plus a portion of excess channels in a proportion to the relative demand of each respective ground station with respect to the total channel demand;

said transmitter in said reference station transmitting said new channel assignments to said ground stations.

4,322,846

SELF-EVALUATION SYSTEM FOR DETERMINING THE OPERATIONAL INTEGRITY OF A DATA PROCESSING SYSTEM

Elmer W. Carroll, Wilmington; Virendra S. Negi, Pepperell, and Arthur Peters, Sudbury, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 15, 1980, Ser. No. 140,621
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—16 **10 Claims**

1. A self-diagnosing system for detecting malfunctions in a data processing system comprising:

a central processor unit having a plurality of subprocessing units.

a control store for addressably storing a plurality of sequences of control data;

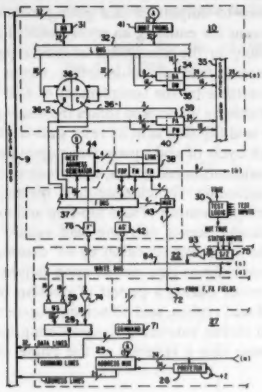
means for selectively accessing said control date stored in said control store;

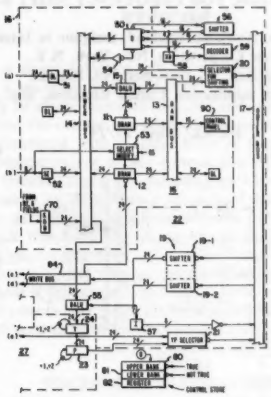
means for controlling said subprocessing units in response to said accessed control data to perform self-diagnosing error detecting operations in accordance with the most recently accessed control data to determine whether a said subprocessing unit is malfunctioning;

means for generating a signal if a said subprocessing unit is malfunctioning;

means for storing an indication of the most recently accessed sequence of control data; and

means, responsive to said signal, for displaying a visual representation of said indication stored in said storing





means whenever a said malfunction is detected in a said subprocessing unit.

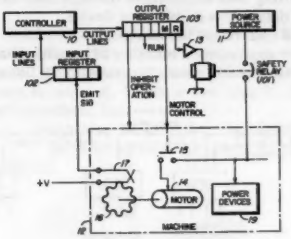
4,322,847
AUTOMATIC INDIRECT TESTING TO VERIFY OPERATIONAL CONTROL

John H. Dodge, Thornton, and Larry M. Ernst, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1980, Ser. No. 128,685
Int. Cl.³ G01R *31/28*; G06F *11/00*
U.S. Cl. 371—20 **5 Claims**

1. A method for verifying, in a system having at least first and second operations initiated and terminated by a controller, the functioning of said second operation being dependent on the successful functioning of said first operation and said second operation being capable of furnishing a sensible result when functioning, that said first operation is responsive to said controller comprising the steps of:

terminating said first operation;
initiating said second operation;
sensing the result of said second operation; and

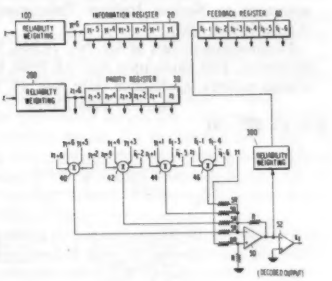


determining that said first operation is not responsive to said controller if the sensed result is manifested.

4,322,848
RELIABILITY-WEIGHTED ANALOG THRESHOLD DECODER

John S. Snyder, Jr., Monrovia, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Jun. 26, 1980, Ser. No. 163,250
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—43 **14 Claims**



1. In an analog threshold decoder for decoding majority logic decodable codes having input and parity bit sequences, said decoder having multi-stage analog storage means having at least one input for storing analog voltages supplied to said input, and summation means for providing an analog output derived from the selective combination of a plurality of said stored analog voltages, the improvement comprising:

input non-linear reliability weighting means for receiving analog voltages representing bit values in said information and parity bit sequences and, for each received analog voltage, providing to the input of said analog storage means a voltage which is a non-linear function of said received analog voltage and represents both the polarity and reliability of the bit value represented by said received analog voltage.

4,322,849
DATA RELAY SYSTEM

Frank A. Calabrese, 118 S. Broad, Waynesboro, Pa. 17268

Filed Apr. 14, 1980, Ser. No. 140,229
Int. Cl.³ H04B *3/36*
U.S. Cl. 375—3 **2 Claims**

1. A data relay system comprising

a host device,

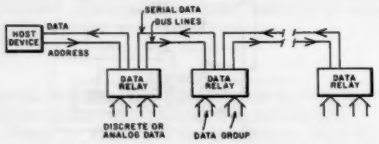
a plurality of data relays each having a unique address,

data line means for transmitting addresses from said host device sequentially to each of said plurality of data relays and

for transmitting data sequentially through each of said plurality of data relays to said host device,

each of said data relays including

means for sequencing a plurality of parallel data groups, an address selection means for recognizing the address of



said data relay transmitted sequentially to each of said plurality of data relays and energizing said sequencing means, and

means for serializing the parallel data group selected by said sequencing means and for transmitting said selected serialized data group to said data line means whereby the serialized data will be sequentially transmitted through the data relays intermediate the addressed data relay and said host device to said host device.

4,322,850

SAMPLING SYSTEM FOR DECODING BIPHASE-CODED DATA MESSAGES

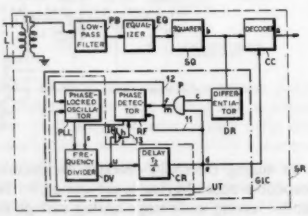
Atus Antonini, Milan, and Ugo W. Rossi, Ravenna, both of Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 76,564, Sep. 18, 1979, abandoned. This application Apr. 16, 1980, Ser. No. 140,798

Claims priority, application Italy, Sep. 19, 1978, 27826 A/78

Int. Cl.³ H03D *3/22*

U.S. Cl. 375—81 **3 Claims**



1. In a receiver for a biphase-coded carrier wave of predetermined frequency undergoing a phase reversal in the middle of each cycle thereof and also at the beginning of certain cycles according to the logical value of corresponding bits of a binary message conveyed thereby, in combination:

input means connected to a transmission line over which said carrier wave arrives from a remote station;

decoding means connected to said input means for sampling said carrier wave once per cycle to reconstruct said binary message; and

circuitry for producing a sequence of timing pulses recurring at said predetermined frequency and controlling the sampling of said carrier wave in said decoding means, said circuitry comprising differentiation means connected to said input means for deriving a spike from said carrier wave upon each phase reversal thereof, timing means controlled by said differentiation means for producing a local square wave of said predetermined frequency in substantial quadrature with said carrier wave, gating means with inputs respectively connected to outputs of said differentiation means and of said timing means for blocking the transmission of said spikes during a fraction of each cycle of said carrier wave equal to substantially half a cycle thereof, and phase-detecting means with input connections to outputs of said gating means and of said timing means for emitting an error pulse in response to a discontinuity in the succession of spikes passed by said gating means, said phase-detecting means including a flip-flop settable by the complement of said square wave and resettable by unblocked spikes from said gating means whereby said flip-flop is in its reset state during one quarter of each cycle of said square wave upon periodic recurrence of said unblocked spikes, said phase-detecting means further including coincidence-gate means with inputs connected to an output of said flip-flop and to output leads of said timing means carrying said square wave and a replica thereof relatively offset by 90° causing conduction of said coincidence-gate means upon failure of said reset state to occur during a period of overlap of said square wave and said replica, said coincidence-gate means having an output circuit extending to said timing means for triggering same into a reversal of the phase of said square wave.

4,322,851

DECODING LOGIC FOR FREQUENCY SHIFT KEYING RECEIVER

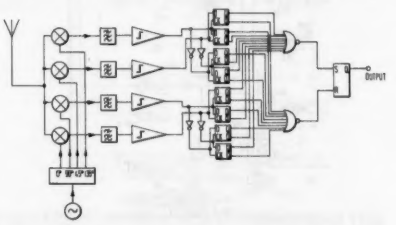
Ian A. W. Vance, Newport, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 27, 1980, Ser. No. 181,591

Claims priority, application United Kingdom, Sep. 4, 1979, 30578/79

Int. Cl.³ H04L *27/14*

U.S. Cl. 375—88 **4 Claims**

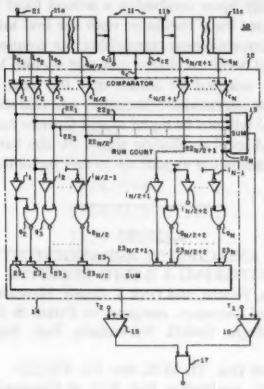


1. A radio receiver for frequency shift keyed signals on a RF carrier comprising n/2 pairs of signal paths to which the received radio signals are applied, where n is a multiple of 2 which is greater than 2, comprising a local oscillator running at the carrier frequency, means for mixing the output of the local oscillator with received radio signals in each path whereby the mixed signals in each of the paths of a pair are in quadrature and the mixed signals in successive paths have effectively a phase shift of 360/n° with respect to adjacent paths, each path including a low pass filter and a limiting amplifier stage to which the mixed signals are applied, the output from the limiting amplifier in each path forming effectively a square wave signal, decoding logic circuit means for each pair of paths to which the outputs from the limiting amplifiers are applied whereby changes in the relative phase of the amplifier outputs are indicated and binary adder means for summing the outputs of the decoding means, and in which said decoding logic circuit means includes for each pair of paths two pairs of D-type flip-flops, the output of the limiting amplifier in each path being applied to a D-input of one flip-flop and clock input of the other of one pair of flip-flops and with relative inversion to a D-input of one flip-flop and clock input of the other of the second pair of flip-flops.

4,322,852
SHADOW RESISTANT QUANTIZER FOR SIGNAL DETECTION

Richard M. Barnes, Acton, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed May 23, 1980, Ser. No. 152,962
Int. Cl.³ G06F *15/34*
U.S. Cl. 375—94 **6 Claims**

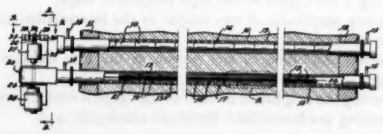


1. In a signal detection system which includes a delay line having a plurality of output taps with one a central tap, a plurality of signal comparators, one associated with each tap other than the central tap wherein a signal level at the central tap is compared with a signal level at the associated tap, a signal representative of this comparison being coupled to an output terminal thereof, a summing network coupled to said comparators for determining the rank of the signal at the central tap, and a rank comparator wherein the rank is compared to a rank threshold, the improvement that said plurality of signal comparators have additionally coupled thereto, means for determining the number of runs of adjacent taps at which said signal levels exceed said signal level at said central tap, thereby establishing a run count, said run count and said rank being utilized to establish a signal detection at said central tap.

4,322,853
NUCLEAR REACTOR CONTROL

William E. Cawley, Phoenix, Ariz., and Robert F. Warnick, Pasco, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 27, 1963, Ser. No. 305,245
Int. Cl.³ G21C *7/10*
U.S. Cl. 376—213 **4 Claims**

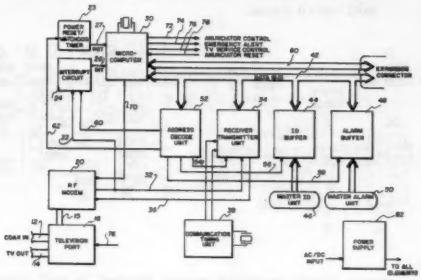


1. In a nuclear reactor incorporating a plurality of columns of tubular fuel elements disposed in horizontal tubes in a mass of graphite wherein water flows through the tubes to cool the fuel elements, the improvement comprising at least one control column disposed in a horizontal tube including fewer fuel elements than in a normal column of fuel elements and tubular control elements disposed at both ends of said control column, and means for varying the horizontal displacement of the control column comprising a winch at the upstream end of the control column and a cable extending through the fuel and control elements and attached to the element at the downstream end of the column.

4,322,854
DATA COMMUNICATIONS TERMINAL

Allan B. Bundens, 1831 Clear Creek La., and Carl F. Schoeneberger, 2032 Christie La., both of Carrollton, Tex. 75007, assignors to Allan B. Bundens and Carl F. Schoeneberger, both of Carrollton, Tex.

Filed May 18, 1979, Ser. No. 40,472
Int. Cl.³ H04B *3/02*; H04N *7/10*
U.S. Cl. 455—5 **17 Claims**



1. A remote data terminal for use in a data acquisition and control system having a central data processing system and a plurality of such data terminals, comprising:

data interface means for receiving data from said central data processing system and transmitting data to said central data processing system in a transmission format, including means for converting said data to a processing format compatible with the logic of said terminal;

microcomputer processing means for receiving data from said data interface means, for processing said data, for transmitting and receiving data to a common data bus in communication with said data interface means and for generating response data to be transmitted to said central data processing system;

identification means having an identification code for generating and transmitting data on said common data bus to said microcomputer means to identify said terminal;

data generating means for generating response data on said common data bus to said microcomputer means for transmitting to said central data processing system; and

address decode means for generating control data to activate and deactivate said data interface means, said identification means and said data generating means.

4,322,855
REMOTE CONTROL APPARATUS

Takao Mogi, Tokyo; Shigetoshi Murakami, Itabashi; Hisao Okada, Yokohama, and Yoshio Ishigaki, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

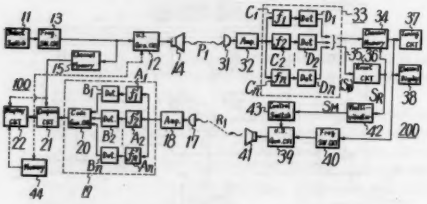
Continuation of Ser. No. 3,755, Jan. 15, 1979, abandoned. This application Jun. 18, 1980, Ser. No. 160,622
Claims priority, application Japan, Jan. 24, 1978, 53-6525
Int. Cl.³ H04B *1/06*; H04N *5/46*
U.S. Cl. 455—151 **11 Claims**

1. In a wireless remote control system for a television receiver having a channel command device and a responding device; and in which said channel command device includes channel selecting means for selecing one channel command from among a plurality of predetermined channel commands, command signal generating means for generating a channel command signal corresponding to said one channel command and channel command transmitting means having a first transducer for transmitting said channel command signal; and said

responding device includes channel command receiving means having a second transducer for receiving said transmitted channel command signal and channel command discriminating means for discriminating said channel command signal and supplying a channel selecting signal corresponding to said discriminated channel command signal to a tuning circuit; the improvement comprising:

return signal generating means located in said responding device for producing a return signal corresponding to the channel command indicated by said channel selecting signal;

return signal transmitting means also located in said responding device and having a third transducer for transmitting said return signal;



return signal receiving means located in said command device and having a fourth transducer for receiving the transmitted return signal;

return signal discriminating means located in said command device for discriminating said return signal and producing a discriminated return signal indicating the channel command to which said return signal corresponds;

comparing means located in said command device for comparing said one channel command and said discriminated return signal; and

indicating means connected to said comparing means for indicating a coincidence of said one channel command and said discriminated return signal.

4,322,856

DOUBLE SUPERHETERODYNE TUNER FOR RECEIVING TELEVISION AURAL SIGNALS

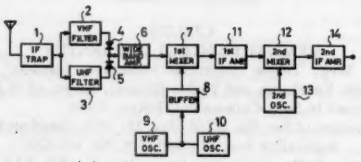
Shigeo Ohta, Saoma; Takeo Suzuki, Soma, and Kazumi Kuwabara, Fukushima, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1980, Ser. No. 130,192

Claims priority, application Japan, Mar. 14, 1979, 54-29568

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—189 **9 Claims**



1. In a double superheterodyne tuner for receiving television signals in both the VHF band and the UHF band, said tuner including a first local VHF oscillator adapted to produce an appropriate local oscillation signal during reception of signals in the VHF band, a second local UHF oscillator adapted to produce an appropriate local oscillation signal during reception of signals in the UHF band, means associated with said local oscillators for selecting the local oscillation signal corresponding to the band of the received signal, a first mixer stage for producing a first intermediate frequency upon combining with the received signal a first local oscillation signal selected from said first local VHF oscillator or said second local UHF oscillator, and a second mixer stage producing a second intermediate frequency upon combining a second local oscillation signal from a third local oscillator with the first intermediate frequency, the improvement comprising the frequency range of said first local VHF oscillator and said second local UHF oscillator being selected to assure that the beat frequency between said first intermediate frequency and said second local oscillation signal will not be equal to and thereby not interfere with said second local oscillation signal for the harmonics of said two local oscillation signals up to and including the fifth order.

4,322,857

METHOD AND CIRCUIT ARRANGEMENT FOR MONITORING A RADIO RECEIVER

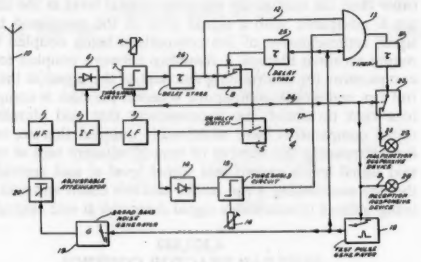
Erich Grohmann, Feucht, and Dirk J. Braak, Heroldsberg, both of Fed. Rep. of Germany, assignors to Felten & Guilleaume Fernemeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

Filed Dec. 11, 1978, Ser. No. 970,123

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755221

Int. Cl.³ H04B *33/46*

U.S. Cl. 455—226 **7 Claims**



5. A method for monitoring a radio receiver in order to verify and deverify proper operation thereof, when the receiver has a high frequency stage, an intermediate frequency stage and a low frequency stage, the method comprising the following steps:

applying a test signal to the high frequency stage;

measuring amplitude of any output at the intermediate frequency stage;

measuring amplitude of any output at the low frequency stage;

comparing the amplitude of each of the outputs with a corresponding predetermined threshold amplitude; and

verifying proper operation of the radio receiver when amplitude of each output at least equals its corresponding threshold amplitude, and deverifying proper operation otherwise, said comparing step and the verifying and deverifying step being performed continuously and the monitoring being performed while the receiver is in use.

DESIGN PATENTS

GRANTED MAR. 30, 1982

ERRATA

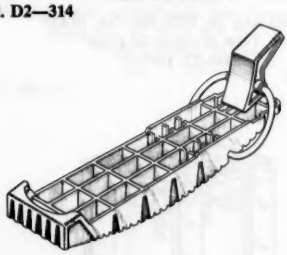
For CLASS	See PATENT NO.
D32–018	263,547
D34–014	263,573
D34–035	263,574
D34–035	263,575
D24–024	263,635

DESIGNS

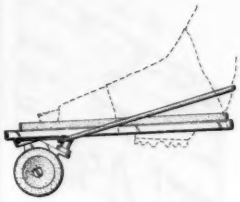
MARCH 30, 1982

263,515
BILL PORTION OF A SUN VISOR
Charles E. Townsend, Jr., 11 Ranch Rd., Orinda, Calif. 94563, and Francis M. Mair, Berkeley, Calif., assignors to Charles E. Townsend, Jr., San Francisco, Calif.
Filed Sep. 17, 1979, Ser. No. 75,786
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—247

263,516
SKI BOOT WALKING ACCESSORY
Donald J. Booty, Frankfort, Ill., assignor to Snow Biz, Inc., Chicago, Ill.
Filed Jan. 17, 1980, Ser. No. 113,081
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—314

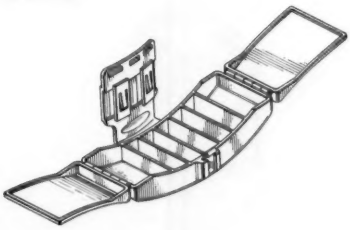


263,517
ORTHOPEDIC REPAIR AND MOBILITY DEVICE
Scott K. Ellington, 977 Pine St., #305, San Francisco, Calif. 94108
Filed Jan. 28, 1980, Ser. No. 115,718
Term of patent 7 years
Int. Cl. D2—*04*
U.S. Cl. D2—314



263,518
SOLE FOR FOOTWEAR
Jacques Cohen, 1370 Avenue of Americas, New York, N.Y. 10019
Filed Dec. 20, 1978, Ser. No. 971,544
The portion of the term of this patent subsequent to Mar. 16, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322

263,519
WEARABLE TACKLE BOX
Gary B. Ader, Spirit Lake, Iowa, assignor to Berkley and Company, Inc., Spirit Lake, Iowa
Filed Feb. 11, 1980, Ser. No. 120,367
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D2—406

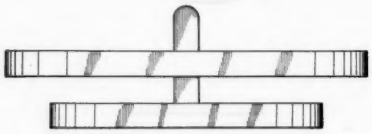


263,520
DECORATIVE PANEL FOR GARMENTS AND PURSES
Gregory Poe, 10774 Weyburn Ave., Los Angeles, Calif. 90024
Filed Jan. 28, 1980, Ser. No. 116,162
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—452

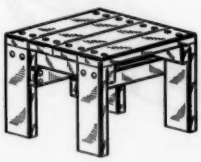
263,521
HANDLE FOR WALKING STICK OR THE LIKE
Victor E. Hill, 4 High Meadows, Greetland, Halifax, West Yorkshire, England
Filed Mar. 13, 1979, Ser. No. 20,155
Claims priority, application United Kingdom, Sep. 26, 1978, 986527/78
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D3—15

263,522
HAND SWEEPER
Nenad Obradovic, P.O. Box 1575, Stow, Ohio 44224
Filed Nov. 1, 1979, Ser. No. 90,268
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—9

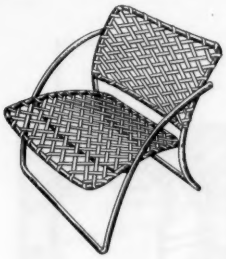
263,523
BENCH
Joseph E. Kinnebrew, IV, 13300 Beckwith Dr., NE., Lowell, Mich. 49331
Filed Mar. 28, 1979, Ser. No. 24,543
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26



263,524
BACKLESS CHAIR OR SIMILAR ARTICLE
Suzanne M. Hanson, 1912 Limetree Lane, Mountain View, Calif. 94040
Filed Aug. 28, 1979, Ser. No. 70,429
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—58

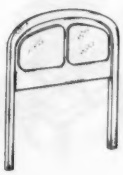


263,525
FOLDING CHAIR
Donald B. Colby, Los Angeles, Calif., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Sep. 4, 1979, Ser. No. 72,324
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—70

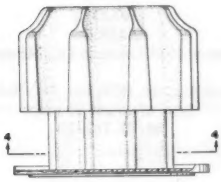


263,526
CHAIR
Donald J. Borichevsky, Wells, Vt., assignor to The Telescope Folding Furniture Co., Inc., Granville, N.Y.
Filed Sep. 5, 1979, Ser. No. 72,342
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73

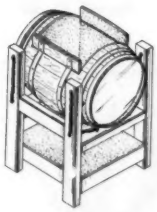
263,527
HEADBOARD OR THE LIKE
Haywood L. West, Guilford County, N.C., assignor to Burlington Furniture Div. of Burl. Ind., Inc., Greensboro, N.C.
Filed Feb. 21, 1979, Ser. No. 13,014
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79



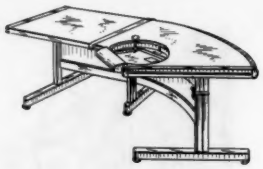
263,528
ROTATABLE DISPENSING RACK FOR FOOD JARS
Thomas E. Gunnigle, Atlanta, Ga., assignor to Pansy Ellen Products, Inc., Atlanta, Ga.
Filed Jun. 18, 1979, Ser. No. 49,393
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—146



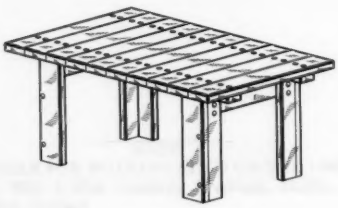
263,529
RECORD ALBUM STORAGE BARREL
Mark W. Magyar, 1711 Poplar St., Granite City, Ill. 62040
Filed Aug. 1, 1979, Ser. No. 62,681
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—153



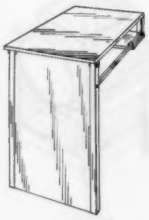
263,530
DESK
Lars Liljeqvist, Drottninggatan 27, S-702-22 Orebro, Sweden
Filed Apr. 17, 1978, Ser. No. 896,787
Claims priority, application Sweden, Oct. 17, 1977, 2078
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—176



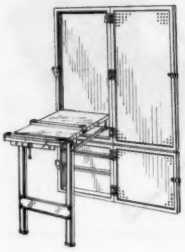
263,531
TABLE
Suzanne M. Hanson, 1912 Limetree La., Mountain View, Calif. 94040
Filed Aug. 28, 1979, Ser. No. 70,428
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



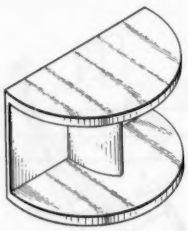
263,532
FOLDAWAY WORK CENTER
Irwin J. Ferdinand, Glencoe; Richard Sylvan, Glenview, and Herbert Baisch, Niles, all of Ill., assignors to Hirsh Company, Skokie, Ill.
Filed Feb. 8, 1980, Ser. No. 119,754
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—178



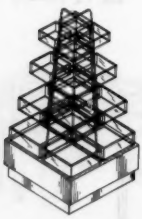
263,533
FOLDAWAY WORKSHOP
Irwin J. Ferdinand, Glencoe; Richard Sylvan, Glenview, and Herbert Baisch, Niles, all of Ill., assignors to Hirsh Company, Skokie, Ill.
Filed Feb. 8, 1980, Ser. No. 119,755
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—178



263,534
SHELVING UNIT
Frederick E. Markus, 20 Park Ave., Belmont, Mass. 02178
Filed Sep. 20, 1979, Ser. No. 77,293
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



263,535
NAPKIN RING DISPLAY UNIT
Nedim Savas, Wheaton, Md., assignor to Russell William, Ltd., Columbia, Md.
Filed Apr. 2, 1980, Ser. No. 136,465
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



263,536

COCKTAIL TABLE OR SIMILAR ARTICLE

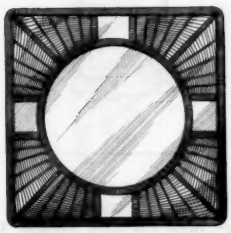
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015

Filed Aug. 28, 1979, Ser. No. 70,439

Term of patent 14 years

Int. Cl. D6—*03*

U.S. Cl. D6—175



263,537

SAFETY STRAP FOR USE IN A VEHICLE SEAT

Joseph P. Markham, Denver, Colo., assignor to Safety First Corporation, Denver, Colo.

Filed Jan. 17, 1980, Ser. No. 112,868

Term of patent 14 years

Int. Cl. D6—*99*

U.S. Cl. D6—191

263,538

MERCHANDISE DISPENSER

Charles J. Briggs, London, and Hubert Lindsell, Tunbridge Wells, both of England, assignors to Display PJF Ltd., London and The Boots Company Limited, Nottingham, both of, England

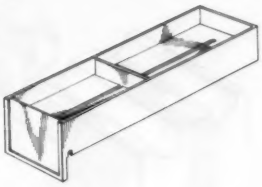
Filed Jan. 25, 1980, Ser. No. 115,574

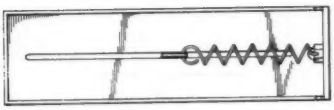
Claims priority, application United Kingdom, Aug. 1, 1979, 991021/79

Term of patent 14 years

Int. Cl. D06—*04*

U.S. Cl. D6—191





263,539

BACKREST

Karl M. Jacobs, 708 E. Sixth St., Fowler, Ind. 47944

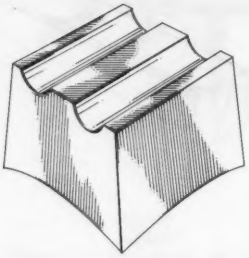
Filed Feb. 7, 1979, Ser. No. 10,162

Term of patent 14 years

Int. Cl. D6—*09*

U.S. Cl. D6—197

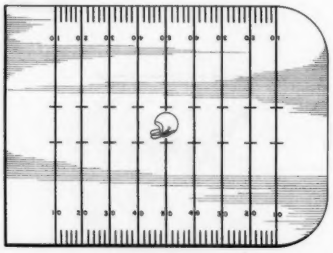
263,540
VEHICLE SEAT ARM REST
Michael L. Flanagan, 3224 Peachtree Rd. NE., Atlanta, Ga. 30305
Filed Jan. 29, 1980, Ser. No. 116,482
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—200



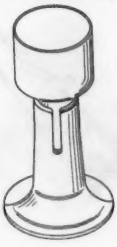
263,541
DOOR MAT BASE PLATE OR SIMILAR ARTICLE
Ken Yamazaki, Kobe; Yosuke Yamamoto, Toyonaka; Takehisa Kinoyama, Suita, and Kinichi Sasagawa, Takatsuki, all of Japan, assignors to Duskin Franchise Kabushiki Kaisha (Duskin Franchise Co., Ltd.), Osaka, Japan
Filed May 8, 1980, Ser. No. 147,716
Claims priority, application Japan, Dec. 10, 1979, 54-51548
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—219

263,542
MIRROR FRAME OR SIMILAR ARTICLE
Sidney A. Lenger, Jr., Jamestown, N.C., assignor to The Singer Company, Stamford, Conn.
Filed Sep. 12, 1980, Ser. No. 186,783
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—241

263,543
BEDSPREAD
Marie L. Daugherty, 16254 Los Altos, Houston, Tex. 77083
Filed May 19, 1980, Ser. No. 151,334
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—258



263,544
COMBINED BEVERAGE CUP AND HOLDER
Jorma H. Vennola, Iittala, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed Jan. 18, 1979, Ser. No. 4,394
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—3

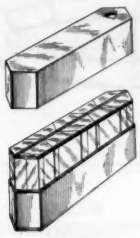


263,545

DISPENSER

Marcia Sandground, 7212 Greentree Rd., Bethesda, Md. 20034, and Susan L. Bowen, 1103 C St., SE., Apt. 21, Washington, D.C. 20003

Filed Apr. 2, 1980, Ser. No. 136,532
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—57

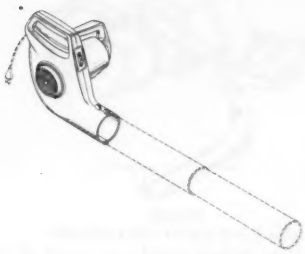


263,547

PORTABLE ELECTRIC AIR BLOWER AND VACUUM

Anthony Carsello, Chino, Calif., assignor to Allegretti & Company, Chatsworth, Calif.

Filed Dec. 13, 1979, Ser. No. 103,196
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—18

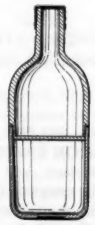


263,546

COMBINED PITCHER WITH AN ICE BOTTLE

Kiyoshi Inoue, Tsubame, Japan, assignor to Inoue Co., Ltd., Tsubame, Japan

Filed Nov. 1, 1979, Ser. No. 90,102
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—59



263,548

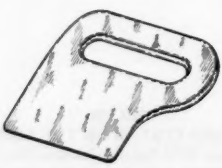
WEED PULLER OR THE LIKE

Charles F. Rodgers, 9007 Noroad, Jacksonville, Fla. 32210, and Herman R. Rodgers, P.O. Box 43, Ellerslie, Ga. 31807

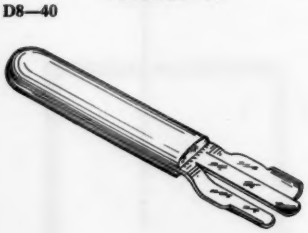
Filed Jan. 14, 1980, Ser. No. 111,586
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—4

263,549
GARDEN IMPLEMENT BLADE
Eli J. Bennett, Belle Meade Ranch, Hagerman, Id. 83332
Filed Nov. 17, 1980, Ser. No. 207,398
The portion of the term of this patent subsequent to Sep. 15, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—12

263,550
MULTIPURPOSE CARPET INSTALLING TOOL
Jerome W. Zuhlsdorf, 206 Oak Knoll, Mankato, Minn. 56001
Filed Oct. 15, 1979, Ser. No. 84,811
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—15

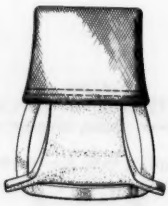


263,551
CAN OPENER
Kenneth L. Dale, Des Moines, Iowa, assignor to Charles N. Sallade, West Des Moines, Iowa
Filed Apr. 7, 1980, Ser. No. 137,765
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D8—40



263,552
COMBINED WIRE AND BOLT PLIERS
Alfred Z. Boyajian, P.O. Box 811, Manhattan Beach, Calif. 90268
Filed Dec. 10, 1979, Ser. No. 101,885
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—52

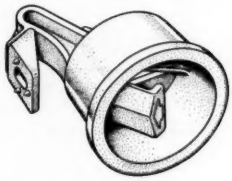
263,553
HAMMER HEAD CUSHION
William B. Beck, 1519 Halter Pl., San Marcos, Calif. 92069, and James W. Beck, 2166 Bella Vista Dr., Vista, Calif. 92083
Filed Feb. 25, 1980, Ser. No. 124,042
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—78



263,554
COMBINED DOOR KNOB AND ROSETTE
Brian Wasbrough, Canterbury, and Harold F. Munro, Ringwood, both of Australia, assignors to Gainsborough Hardware Industries Pty. Limited, Canterbury, Australia
Filed Jan. 18, 1980, Ser. No. 113,203
Claims priority, application Australia, Jul. 20, 1979, 78476/79
Term of patent 14 years
Int. Cl. D8—*06, 09*
U.S. Cl. D8—301

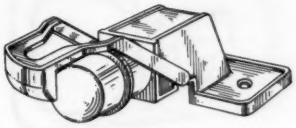
263,555
PROP LOCK
Gerald J. Curtis, 8806 Glen Loch, Houston, Tex. 77017
Filed Oct. 5, 1979, Ser. No. 84,993
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—331

263,556
EXTERNALLY RELEASING LATCH
Robert S. Wallace, Los Angeles, Calif., assignor to Dan F. Wallace, Karlua-Kona, Hi.
Filed Feb. 19, 1980, Ser. No. 122,879
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—331

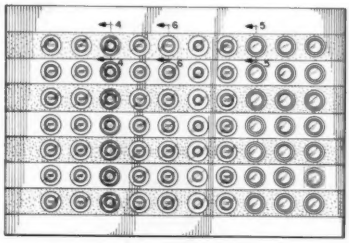


263,557
WALL ANCHOR
Ruediger Einhorn, Katonah, N.Y., assignor to Coats & Clark, Inc., Stamford, Conn.
Filed Sep. 12, 1979, Ser. No. 74,754
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—385

263,558
COMBINED DOOR STOP AND LATCHING DEVICE
Mike Y. Morita, 15722 S. Normandie Ave., Gardena, Calif. 90247
Filed Nov. 16, 1979, Ser. No. 94,702
Term of patent 14 years
Int. Cl. D8—*08, 09*
U.S. Cl. D8—402

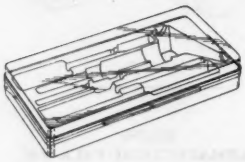


263,559
PHARMACEUTICAL PACKAGE
Albert C. G. Poore, New Malden, England, assignor to Sterling Drug, Inc., New York, N.Y.
Filed Apr. 2, 1979, Ser. No. 26,233
Claims priority, application United Kingdom, Oct. 3, 1978, 986713
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—337



263,560
BOTTLE
Jacques Leonard, 19, Avenue de l'Opera, 75001 Paris, France
Filed May 24, 1979, Ser. No. 42,137
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—337

263,561
COMBINED DISPLAY AND STORAGE CONTAINER FOR TOOLS OR THE LIKE
Siu W. Wong, Kowloon, Hong Kong, assignor to Ching Wah Metal Ware Factory Limited, Kowloon, Hong Kong
Filed Mar. 19, 1979, Ser. No. 21,983
Term of patent 7 years
Int. Cl. D9—*03*
U.S. Cl. D9—347



263,562
BOTTLE
Stephen P. Cincala, Rossford, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 6, 1979, Ser. No. 101,035
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—349

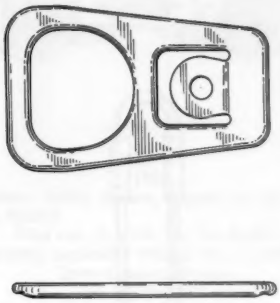
263,563
BOTTLE
Nobuyoshi Ito, Yawata, Japan, assignor to Suntory Kabushiki Kaisha (Suntory Limited), Osaka, Japan
Filed Apr. 27, 1979, Ser. No. 34,004
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—352

263,564
PERFUME BOTTLE
Douglas B. Smith, Larchmont, N.Y., and Arthur R. Torell, Wyckoff, N.J., assignors to Avon Products, Inc., New York, N.Y.
Filed Nov. 14, 1979, Ser. No. 93,948
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—385

263,565
COMBINED CONTAINER AND CLOSURE FOR PAINT OR THE LIKE
Peter A. Woinarski, 162/C Queen St., Woollahra, Sydney, Australia (2025)
Filed Jan. 4, 1979, Ser. No. 973
Claims priority, application Australia, Aug. 2, 1978, 75479
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—399

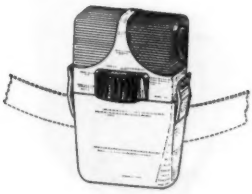
263,566
NURSER BOTTLE OVERWRAP
Peter T. Polito, and Norman W. Ross, both of Reedsburg, Wis., assignors to Gerber Products Company, Fremont, Mich.
Filed Jan. 24, 1980, Ser. No. 114,871
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—418

263,567
PULL TAB FOR A CONTAINER END
Gary K. Hasegawa, Chicago, Ill., assignor to The Continental Group, Inc., Stamford, Conn.
Filed Oct. 29, 1979, Ser. No. 88,981
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—438



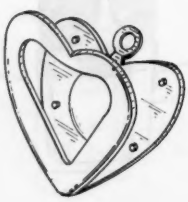
263,568
STRENGTH METER
Charlton Sadler, P.O. Box 446, Brooksville, Fla. 33512
Filed Jun. 4, 1979, Ser. No. 45,080
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—83

263,569
ARM LIGHT FOR BICYCLISTS AND PEDESTRIANS
Raymond A. Benoit, Septeuil, France, assignor to Societe les Piles Wonder, France
Filed Oct. 30, 1979, Ser. No. 89,305
Claims priority, application France, May 7, 1979, 42,442
Term of patent 14 years
Int. Cl. D10—*06*; D26—*02*
U.S. Cl. D10—114



263,570
NECKLACE WITH ILLUMINABLE PENDANT
Miroslav Gordan, 2958 S. Laramie, Cicero, Ill. 60650
Filed May 30, 1979, Ser. No. 43,730
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—7

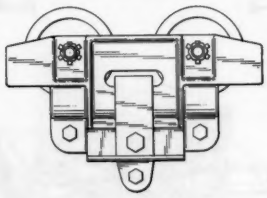
263,571
SNAP FRAME
Hanns W. Beier, 853 Scarsdale Rd., Crestwood, N.Y. 10707
Filed May 28, 1980, Ser. No. 154,003
Term of patent 3½ years
Int. Cl. D11—*01*
U.S. Cl. D11—80



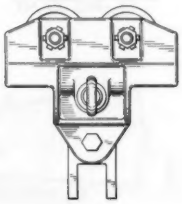
263,572
HOUSING FOR HYDROPONIC APPARATUS
Frank W. Leroux, 5575 Williamsdale Ct., Seminole, Fla. 33603
Filed Mar. 30, 1979, Ser. No. 25,490
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—152

263,573
FOOD WARMING TROLLEY
Peter Ingledew, Cambridge, England, assignor to Pye (Electronic Products)Limited, Cambridge, England
Filed Apr. 2, 1979, Ser. No. 25,811
Claims priority, application United Kingdom, Oct. 3, 1978, 986681
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—14

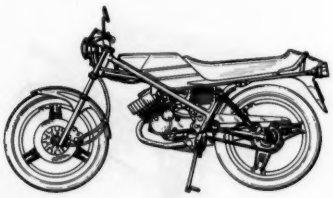
263,574
FOUR WHEEL TROLLEY
John F. Miller, P.O. Box 277, Howell, Mich. 48843
Filed Mar. 15, 1979, Ser. No. 20,660
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D34—35



263,575
SAFETY TROLLEY
John F. Miller, P.O. Box 277, Howell, Mich. 48843
Filed Mar. 15, 1979, Ser. No. 20,661
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D34—35



263,576
MOTORCYCLE
Minoru Morioka, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 12, 1978, Ser. No. 970,396
Claims priority, application Japan, Jun. 27, 1978, 53-27172
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110

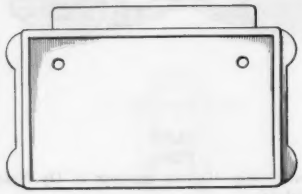


263,577
MOTORCYCLE RADIO HOUSING
Fred O. Hoese, P.O. Box 41, Bulverde, Tex. 78216
Filed Apr. 26, 1979, Ser. No. 33,796
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114

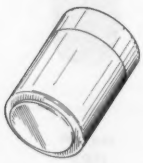
263,578
TIRE
Raimo Nyblom, Nokia, Finland, assignor to Oy Nokia AB, Helsinki, Finland
Filed Apr. 25, 1979, Ser. No. 33,233
Claims priority, application Finland, Oct. 27, 1978, 663
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—136

263,579
TIRE
Alfred Rampl, Günselsdorf, Austria, assignor to Deutschen Semperit Gesellschaft m.b.H., Munich, Fed. Rep. of Germany
Filed Nov. 29, 1978, Ser. No. 964,510
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1978, 11335
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146

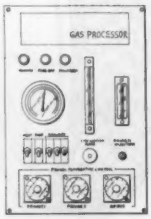
263,580
MOTOR CYCLE LICENSE PLATE HOLDER
Norman D. Scott, 5267 Taylor Ave., Port Orange, Fla. 32019
Filed Jan. 22, 1980, Ser. No. 115,603
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—193



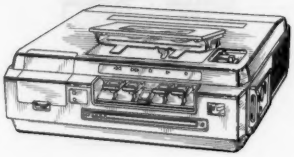
263,581
ELECTRIC BATTERY
Gordon E. Kaye, Garrison, N.Y., assignor to Duracell International Inc., Bethel, Conn.
Filed Jan. 24, 1977, Ser. No. 762,082
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—2



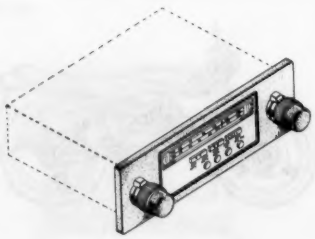
263,582
CONTROL PANEL FOR GAS RECYCLING APPARATUS
Robert E. Turner, 2 Quincy Ct., Setauket, N.Y. 11733
Filed Sep. 6, 1979, Ser. No. 73,104
Term of patent 7 years
Int. Cl. D13—*03*
U.S. Cl. D13—35



263,583
VIDEO TAPE RECORDER
Tsutomu Kawai, Yokosuka, Japan, assignor to Funai Electric Trading Co., Inc., Osaka and Efuti Giken Co., Ltd., Yokohama, both of, Japan
Filed Jun. 18, 1980, Ser. No. 160,485
Claims priority, application Japan, Dec. 27, 1979, 54-55392
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—2



263,584
CONTROL UNIT FOR A COMBINED AUTOMOBILE CASSETTE PLAYER AND RADIO
John F. Castagna, Brooklyn, and Ronald A. Emmerling, New City, both of N.Y., assignors to Sparkomatic Corporation, Milford, Pa.
Filed Oct. 15, 1979, Ser. No. 85,035
The portion of the term of this patent subsequent to Sep. 15, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—10



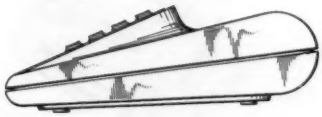
263,585
VIDEO COMPACT CASSETTE
Peter J. Doodson, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 12, 1979, Ser. No. 84,043
Claims priority, application Benelux; Apr. 18, 1979, 53621-00
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—11

263,586
PORTABLE COMPUTER ENCLOSURE
James D. Murez, Santa Monica, Calif., assignor to GM Research, Incorporated, Carson, Calif.
Filed Jun. 11, 1979, Ser. No. 47,061
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—106

263,587
CLOCK RADIO
Pak-Hung Yip, Hong Kong, Hong Kong, assignor to Vita Electronics Corporation Limited, Hong Kong
Filed Jun. 9, 1980, Ser. No. 157,586
Claims priority, application United Kingdom, May 2, 1980, 994763
Term of patent 14 years
Int. Cl. D14—*03*; D10—*01*
U.S. Cl. D14—73

263,588
TELEPHONE BASE SET
Robert E. Hillmer, Ontario, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Jul. 16, 1979, Ser. No. 57,805
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60

263,589
TELEPHONE BASE SET
Clifford D. Read, Almonte, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Jul. 16, 1979, Ser. No. 57,807
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60



263,590

REMOTE TELEPHONE DIALING TOUCH-PAD

Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

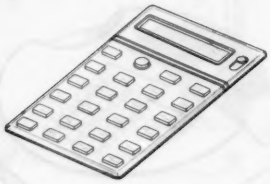
Filed Sep. 24, 1979, Ser. No. 78,173

Claims priority, application Japan, Apr. 13, 1979, 54-014626

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—66



263,591

FACSIMILE TRANSCEIVER OR SIMILAR ARTICLE

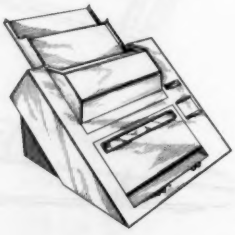
Lawrence E. Barbera, San Francisco, Calif.; John L. Connin, Longwood, Fla.; Michael E. Lawing, Columbus, and Dean W. Richardson, Worthington, both of Ohio, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 11, 1980, Ser. No. 120,269

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—94



263,592

FACSIMILE TRANSCEIVER OR SIMILAR ARTICLE

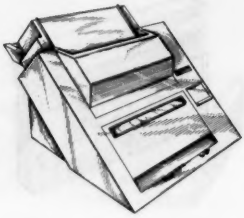
Lawrence E. Barbera, San Francisco, Calif.; John L. Connin, Longwood, Fla.; Michael E. Lawing, Columbus, and Dean W. Richardson, Worthington, both of Ohio, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 11, 1980, Ser. No. 120,270

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—94



263,593

AQUARIUM PUMP HOUSING

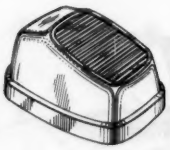
Jerome N. Goldman, New York, and Marvin A. Goldman, Great Neck, both of N.Y., assignors to Penn-Plax Plastics, Inc., Garden City, N.Y.

Filed Jan. 28, 1980, Ser. No. 115,918

Term of patent 14 years

Int. Cl. D15—*02*

U.S. Cl. D15—8



263,594

SLICING MACHINE

Fritz Kuchler, Klatteweg 4-6, A-9019 Klagenfurt, Austria (A-9010)

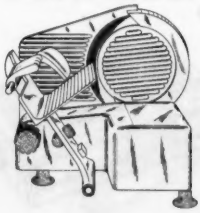
Filed Oct. 1, 1979, Ser. No. 80,572

Claims priority, application Austria, Mar. 29, 1979, 4.86-4.092

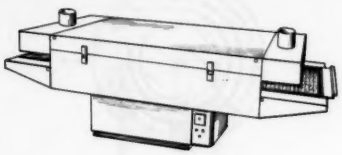
Term of patent 14 years

Int. Cl. D15—*08*

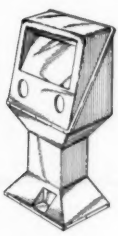
U.S. Cl. D15—97



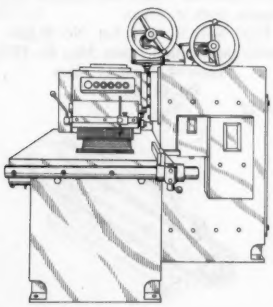
263,595
BAKING OVEN OR SIMILAR ARTICLE
Leif A. T. Johansson, Huddinge; Nils G. Pers, and Staffan Lundgren, both of Upplands-Väsby, all of Sweden, assignors to Tipe Revent AB, Stockholm, Sweden
Filed Jun. 8, 1979, Ser. No. 46,699
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—104



263,596
BEAD BLASTING CABINET
James F. Thomson, 128 5th Ave., Saratoga Springs, N.Y. 12866
Filed Aug. 29, 1979, Ser. No. 70,881
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—124

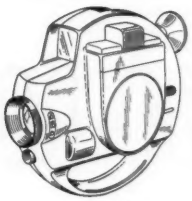


263,597
SLAT BED GANG RIP SAW
Walter O. Paulson, Jr., 1433 NW. Quimby, Portland, Oreg. 97209
Filed Feb. 21, 1979, Ser. No. 13,742
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—133

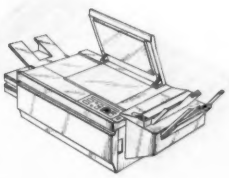


263,598
CUTTER BIT
Will M. Lassiter, 1703 Deep River Rd., High Point, N.C. 27260
Filed Jan. 29, 1979, Ser. No. 7,100
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—139

263,599
MOVIE CAMERA
Norbert Schlagheck, Fuerstenfeldbruck, Fed. Rep. of Germany, assignor to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Feb. 28, 1979, Ser. No. 15,780
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1978, 5542155
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—4



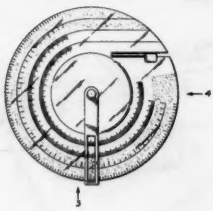
263,600
ELECTROPHOTOGRAPHIC APPARATUS
Yoshiki Furukawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 5, 1979, Ser. No. 17,278
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31

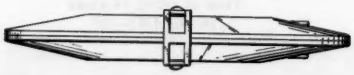


263,601
GUITAR
Gene Klein, 655 Madison Ave., New York, N.Y. 10021
Filed Feb. 29, 1980, Ser. No. 126,052
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—18

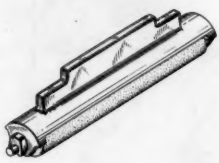
263,602
DESK-TOP ELECTRONIC CALCULATOR
Eiichi Yoshioka, Abiko, and Junichi Motoyoshi, Funabashi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 28, 1980, Ser. No. 134,770
Claims priority, application Japan, Sep. 29, 1979, 54-41115
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

263,603
CONVERSION CALCULATOR OR SIMILAR ARTICLE
Thomas K. McGourty, Adelaida Rte., Paso Robles, Calif. 93446
Filed Apr. 14, 1980, Ser. No. 140,320
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D18—10



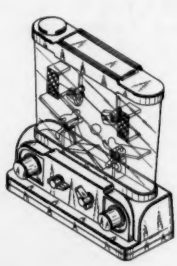


263,604
INKROLLER SET
Tadayoshi Shimodaira, Shiojiri, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shinshu Seiki Kabushiki Kaisha, Nagano, both of, Japan
Filed Nov. 28, 1979, Ser. No. 98,086
Claims priority, application Japan, May 30, 1979, 54-22057
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—22

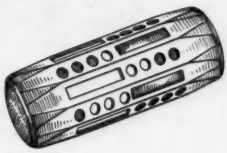


263,605
BUSINESS CARD
William Zborowsky, 60 Stanwood Crescent, Weston, Ontario, Canada (M9M 1Z9)
Filed Feb. 12, 1979, Ser. No. 11,293
Claims priority, application Canada, Aug. 25, 1978, 25086788
Term of patent 14 years
Int. Cl. D19—*05*
U.S. Cl. D19—1

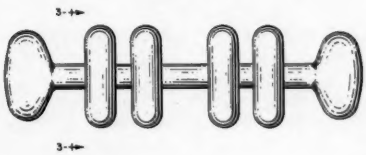
263,606
GAME HOUSING
Hiromi Takahashi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jan. 22, 1980, Ser. No. 114,188
Claims priority, application Japan, Jul. 23, 1979, 54/30795
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—12



263,607
DIE FOR GAME OR SIMILAR ARTICLE
Matts V. Bjon, Louhentie 7 A 4, SF-02130 Espoo 13, Finland
Continuation of Ser. No. 853,824, Nov. 21, 1977, abandoned.
This application Oct. 24, 1980, Ser. No. 200,587
Claims priority, application Finland, May 26, 1977, 357/77
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—41



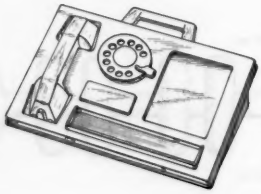
263,608
RATTLE
Edward Loewenton, 271 Western Ave., Lynn, Mass. 01904
Filed Nov. 8, 1979, Ser. No. 92,492
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—65



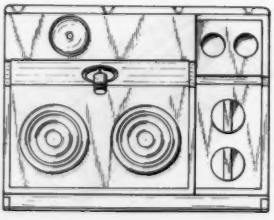
263,609
TOY AIRPLANE
Bernard R. Barrett, 308 Graham Ave., Lombard, Ill. 60148
Filed Apr. 17, 1980, Ser. No. 141,178
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—89

263,610
TOY TELEPHONE
Mark D. Boudreaux, and Jack R. Farrah, both of Cincinnati, Ohio, assignors to CPG Products Corp., Minneapolis, Minn.
Filed Oct. 4, 1979, Ser. No. 81,753
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—111

263,611
TOY MESSAGE CENTER
Andrew I. Bergman, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Nov. 26, 1979, Ser. No. 97,539
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—111



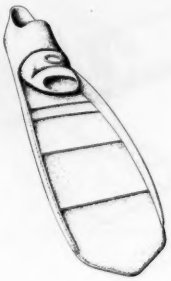
263,612
TOY STOVE
Paul D. Snyder, and Larry R. Nagode, both of East Aurora, N.Y., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 17, 1979, Ser. No. 104,317
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—122



263,613
EXERCISE DEVICE OR SIMILAR ARTICLE
Dean P. Henry, Seattle, Wash., assignor to Cody C. Rembe, Scottsdale, Ariz.
Filed Jun. 29, 1979, Ser. No. 53,316
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—198

263,614
GOLF PUTTER HEAD
Karsten Solheim, 501 W. Wakonda La., Phoenix, Ariz. 85023
Filed May 9, 1980, Ser. No. 148,408
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—217

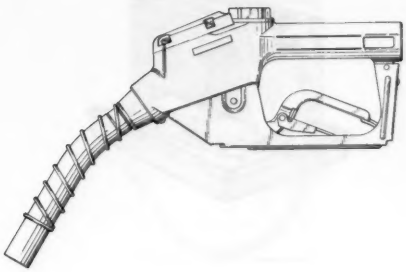
263,615
SWIM FIN
Georges Beuchat, La Maison, Clos du Vallon, 13260 Cassis, France
Filed Nov. 28, 1979, Ser. No. 98,306
Claims priority, application France, Jun. 25, 1979, 79 4398
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—239



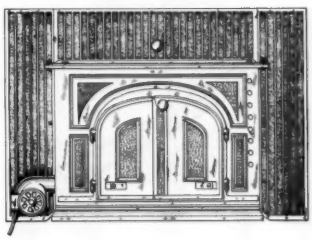
263,616
FISHING FLOAT
Dulor P. Canty, Box 1512, Leadville, Colo. 80461
Filed Aug. 24, 1979, Ser. No. 69,339
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D21—238

263,617
ARTIFICIAL FISHING LURE
William O. Williams, Jr., Rte. 2, Box 172, Clover, S.C. 29710
Filed Jan. 28, 1980, Ser. No. 116,017
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

263,618
DISPENSING NOZZLE
Charles W. Taylor, Batavia, Ohio, assignor to Dover Corporation, New York, N.Y.
Filed Jun. 19, 1979, Ser. No. 50,101
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—37

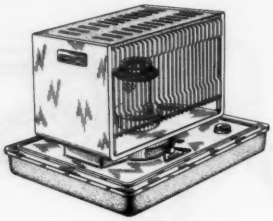


263,619
FIREPLACE INSERT
Larry Schwartz, 67 Hess Ave., Warwick, R.I. 02889
Filed Dec. 17, 1979, Ser. No. 104,433
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—95



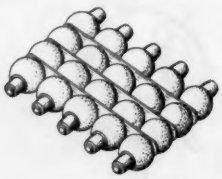
263,620
WOODBURNING STOVE OR SIMILAR ARTICLE
Terry L. Otero, and Donald J. Maxwell, both of Lincoln, Nebr., assignors to Lincoln Stove, Lincoln, Nebr.
Filed Apr. 28, 1980, Ser. No. 144,540
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

263,621
PORTABLE KEROSINE HEATER
Edward Johnson, Furlong, Pa., assignor to Kero-Sun, Inc., Kent, Conn.
Filed Jan. 14, 1980, Ser. No. 111,729
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—124



263,622
POCKET CARRYING CASE FOR MEDICINES
Kenneth Hasson, 3660 Greenvale Rd., Baltimore, Md. 21229
Filed Apr. 27, 1979, Ser. No. 34,361
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—34

263,623
MASSAGER
Denson D. Conn, Sr., Cincinnati, Ohio, assignor to D.M. Systems, Inc., Cincinnati, Ohio
Filed Jan. 10, 1980, Ser. No. 111,080
Term of patent 14 years
Int. Cl. D24—*04;* D28—*03*
U.S. Cl. D24—36



263,624
ADJUSTABLE MEDICAL TUBING SUPPORT FRAME OR SIMILAR ARTICLE
Alex Stenzler, 98 Barry La., Syosset, N.Y. 11791, and Harrel D. Ziecheck, 4 Mimosa La., Piscataway, N.J. 08854
Filed Apr. 16, 1979, Ser. No. 30,500
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—51

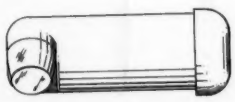
263,625
INFLATABLE NECK SUPPORT
Keith McKnight, Epping, and Kenneth J. Bridges, Cheltenham, both of Australia, assignors to McKnight and Bridges Pty. Limited, Cheltenham, Australia
Filed Feb. 13, 1980, Ser. No. 121,215
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64

263,626
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Apr. 30, 1980, Ser. No. 145,136
Claims priority, application France, Nov. 14, 1979, 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

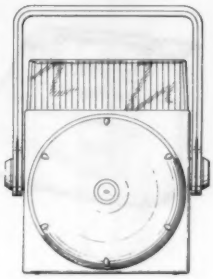
263,627
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Apr. 30, 1980, Ser. No. 145,262
Claims priority, application France, Nov. 14, 1979, 78029
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

263,628
CLUSTER OF GLAZED CERAMIC TILES
Warren Platner, Foote's Bridge Rd., Guilford, Conn. 06437
Filed Sep. 9, 1977, Ser. No. 832,081
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—92

263,629
TOILET LIGHT FOR ATTACHMENT TO TOILET SEAT
David Collins, 5414 Berryhill Dr., Yorba Linda, Calif. 92686, and James Hammond, 413 W. Ruby Dr., Placentia, Calif. 92670
Filed Sep. 26, 1977, Ser. No. 836,919
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—24



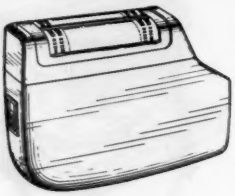
263,630
LANTERN
Chung-Chee Wong, Kowloon, Hong Kong, assignor to Sonca Industries Limited, Kowloon, Hong Kong
Filed Nov. 13, 1979, Ser. No. 94,311
Claims priority, application United Kingdom, Sep. 4, 1979, 991415
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—41



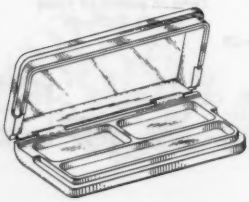
263,631
MINIATURE CHANDELIER
Norman Nelson, Southington, Conn., assignor to Nelson Tool and Machine Company, Inc., Southington, Conn.
Filed Sep. 20, 1979, Ser. No. 77,489
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—84

263,632
PIPE RACK
Theodore O. Barberry, Jr., and Susan J. Barberry, both of 4900 Wetherdsville Rd., Baltimore, Md. 21207
Filed Mar. 15, 1979, Ser. No. 20,723
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—25

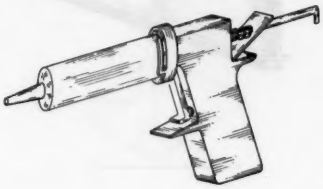
263,633
ELECTRIC SHAVER
Robert O. Ernest, Oak Park; Gordon T. Guth, Evanston, and Douglas G. Long, Lombard, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed May 12, 1980, Ser. No. 149,082
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—49



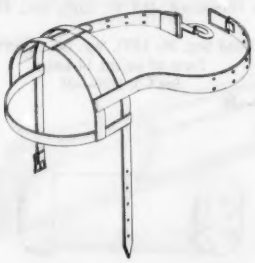
263,634
MAKE-UP BOX
Pierre Ballereaud, 4 bis, route d'Ormoy, 28360 Dammarie, France
Filed Jun. 27, 1980, Ser. No. 163,424
Claims priority, application France, Dec. 31, 1979, 69764
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—83



263,635
LIVESTOCK TREATMENT GUN
Robert J. Wendt, 743 E. Military, Fremont, Nebr. 68025
Filed Mar. 12, 1979, Ser. No. 19,812
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—24



263,636
ANIMAL SAFETY HARNESS FOR AUTOMOBILES OR THE LIKE
John C. Bassani, 8960 Gullo Ave., Arleta, Calif. 91331
Filed Nov. 5, 1979, Ser. No. 91,350
Term of patent 14 years
Int. Cl. D30—*04*
U.S. Cl. D30—38



263,637
CAMOUFLAGE FABRIC FOR APPAREL
Ronald L. Fobes, Suite 300, 41 N. Perry St., Dayton, Ohio 45402
Filed May 4, 1979, Ser. No. 35,938
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 R

263,638
PAYMENT DEPOSIT CABINET
Gerald M. Donlin, St. Cloud, Minn., assignor to American Payment Centers, Inc., St. Cloud, Minn.
Filed May 14, 1979, Ser. No. 38,779
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—28

263,639
SORTING BANK
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Sep. 27, 1979, Ser. No. 79,267
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D99—38

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TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF MARCH, 1982

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Acra Plant, Inc.: *See—*
Robertson, Forrest E.; and Williams, Donald E., 4,321,972, Cl. 172-721.000.

Acton, Terry R. Door holding device. 4,322,103, Cl. 292-288.000.

Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 4,321,851, Cl. 84-1.010.

Adachi, Tetsuo: *See—*
Takayama, Kenichiro; Adachi, Tetsuo; Kohata, Mamoru; Hattori, Kiyoji; and Tomiyama, Tomoko, 4,322,498, Cl. 435-255.000.

Addicks, Lyle F. Bicycle handle bar connector. 4,322,087, Cl. 280-279.000.

Addison Products Company: *See—*
Gifford, Russell L., 4,321,800, Cl. 62-150.000.
Smith, Hayden N., 4,321,803, Cl. 62-507.000.

Addor, Roger W.; and Drabb, Thomas W., Jr., to American Cyanamid Co. Oxalylated amidinohydrazones, method for preparing same and use as insect and fire ant control agents. 4,322,422, Cl. 424-251.000.

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Kunitz, Friedrich-Wilhelm; Puschel, Walter; and Schranz, Karl W., 4,322,492, Cl. 430-375.000.

Ahmad, Nawaz; Kaplan, Leonard; and Ziets, George, to Ortho Pharmaceutical Corporation. Vaginal suppository. 4,322,399, Cl. 424-44.000.

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Yaeger, Ronald J.; and Keller, Gerald W., 4,321,797, Cl. 62-79.000.

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Maluta, James; Wasson, John H.; and Koch, Robert J., 4,321,913, Cl. 128-1.00B.

Aisin Seiki Kabushiki Kaisha: *See—*
Hashimoto, Nobuyuki; and Satomoto, Atsushi, 4,322,032, Cl. 236-48.00R.
Yamanaka, Minoru; Haneda, Hideo; Katoh, Masatoshi; and Suzuki, Mitsuyuki, 4,322,057, Cl. 251-129.000.

Aizawa, Hiroshi: *See—*
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Akebono Brake Industry Co., Ltd.: *See—*
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Schwab, Max; Heinen, Peter; Diederichs, Willi; Gossens, Peter; Ohloff, Fritz-Gunter; and Minkenberg, Hubert, 4,321,843, Cl. 76-107.00A.

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de Klein, Willem J., 4,322,570, Cl. 570-257.000.
Johnson, David A.; Gilly, Robert L.; and Wagener, Kenneth B., 4,322,522, Cl. 528-289.000.
van Drumpt, Jan D., 4,322,273, Cl. 204-165.000.

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Kaspar, Mark L.; and Lowey, James F., 4,322,472, Cl. 428-350.000.

Aldrich, Paul E.; and Berezin, Gilbert H., to Du Pont de Nemours, E. I., and Company. Antihypertensive polyfluoroisopropyl tricyclic carbostyrils. 4,322,417, Cl. 424-246.000.

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Allied Corporation: *See—*
Tovrog, Benjamin S.; Diamond, S. Elliot; and Mares, Frank, 4,322,562, Cl. 568-401.000.

Allison, Henrick. Frequency response analyzer. 4,322,806, Cl. 364-485.000.

Allison, Kevin W.: *See—*
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Alperstein, Martin: *See—*
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Ohta, Shigeo; Suzuki, Takeo; and Kuwabara, Kazumi, 4,322,856, Cl. 455-189.000.

Alston, Otis B., to Dixie Yarns, Inc. Open end spinning apparatus. 4,321,788, Cl. 57-58.950.

Altran Electronics: *See—*
Martinez, Louis, 4,322,842, Cl. 370-11.000.

ALZA Corporation: *See—*
Capozza, Richard C., 4,322,323, Cl. 424-78.000.

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Natkins, Ephraim, 4,321,952, Cl. 140-93.200.

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Addor, Roger W.; and Drabb, Thomas W., Jr., 4,322,422, Cl. 424-251.000.
Floyd, Middleton B., Jr., 4,322,546, Cl. 560-121.000.
Hillard, Ray L.; and Greene, Irwin D., 4,322,359, Cl. 260-347.800.

American Resources Corporation Ltd.: *See—*
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American Safety Razor Company: *See—*
Iten, Clemens A., 4,322,002, Cl. 206-493.000.

American Store Equipment Company: *See—*
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AMF Incorporated: *See—*
Mallette, Rodney C., 4,322,078, Cl. 273-82.00B.

Ammenti, Rino: *See—*
Duck, Sherman W.; and Ammenti, Rino, 4,322,713, Cl. 340-59.000.

AMP Incorporated: *See—*
Johnson, Erlon F., 4,322,025, Cl. 225-96.500.

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Anderson, Harry V., to Rosemount Inc. Self aligning surface temperature sensor. 4,321,827, Cl. 73-343.00R.

Anderson, Mark: *See—*
Lange, Richard L.; and Lange, Randall L., 4,321,890, Cl. 119-96.000.

Anderson, Roger Y. Aquatic sediment and current monitor. 4,321,823, Cl. 73-61.400.

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Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,322,409, Cl. 424-180.000.

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Anio S.p.A.: *See—*
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Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Wiechert, Rudolf, to Schering Aktiengesellschaft. Process for preparing 6-methylene steroids. 4,322,349, Cl. 260-239.55R.

Annetts, Michael J., to Coal Industry (Patents) Limited. Temperature measurement system. 4,322,725, Cl. 340-595.000.

Antonini, Atus; and Rossi, Ugo W., to Societa Italiana Telecomunicazioni Siemens S.p.A. Sampling system for decoding biphase-coded data messages. 4,322,850, Cl. 375-81.000.

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Aoki, Hatsuo: *See—*
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,322,341, Cl. 260-112.50R.

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Bach, Nicholas J.; and Kornfeld, Edmund C., to Eli Lilly and Company. Substituted 4,5,6,7-tetrahydro-1H (or 2H)-indazoles. 4,322,540, Cl. 548-369.000.

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Ban, Mikichi: *See—*
Ito, Susumu; and Ban, Mikichi, 4,322,130, Cl. 350-288.000.

Barbour, Donald R.; Lemke, Guido A.; and Magdo, Steven, to International Business Machines Corp. High performance semiconductor package assembly. 4,322,778, Cl. 361-414.000.

Barkley, Harold K., to National Steel Corporation. Coating thickness control nozzle. 4,321,884, Cl. 118-63.000.

Barkocy, John L.: *See—*
Rebish, Edward J.; Capuano, Terry D.; and Barkocy, John L., 4,322,195, Cl. 411-431.000.

Barley, Geoffrey W.; and Moorhouse, David, to UOP Inc. Vehicle seats. 4,322,111, Cl. 297-357.000.

BARMAG Barmer Maschinenfabrik AG: *See—*
Dammann, Peter; Schippers, Heinz; Turk, Herbert; and Schiminski, Herbert, 4,321,789, Cl. 57-224.000.

Barnack, Henry C., to Tapco Products Company, Inc. Sheet bending brake. 4,321,817, Cl. 72-319.000.

Barnes, Richard M., to Sperry Corporation. Shadow resistant quantizer for signal detection. 4,322,852, Cl. 375-94.000.

Baron, William J.; Kenney, John T.; and Townsend, Wesley P., to Western Electric Co., Inc. Method of selectively depositing a metal on a surface. 4,322,457, Cl. 427-259.000.

Barrash, Marshall J., to Coca-Cola Company, The. Proof-of-purchase means for self-opening cans. 4,322,016, Cl. 220-270.000.

Barrett, Mark D.: *See—*
Funk, Erwin D.; and Barrett, Mark D., 4,322,184, Cl. 406-82.000.

Barry, Graham Charles: *See—*
Tomlinson, Roderick P. J., 4,322,466, Cl. 428-199.000.

Bart, Stan; and Tzakis, George J., to Zenith Radio Corporation. Vertical ramp generator for a television receiver. 4,322,664, Cl. 315-408.000.

Barthel, Walter: *See*—
Muller, Karl-Hans; and Barthel, Walter, 4,322,250, Cl. 106-281.00R.

Baschang, Gerhard: *See*—
Sallmann, Alfred; and Baschang, Gerhard, 4,322,436, Cl. 424-309.000.

BASF Aktiengesellschaft: *See*—
Baumann, Annegrit; Kiehs, Karl; Hamprecht, Gerhard; Lange, Arno; and Adolphi, Heinrich, 4,322,413, Cl. 424-200.000.
Hahn, Erwin; Lach, Dietrich; and Streicher, Rolf, 4,322,210, Cl. 8-94.180.
Manzke, Klaus; and Brotzler, Roland, 4,322,762, Cl. 360-106.000.
Merger, Franz; and Towae, Friedrich, 4,322,365, Cl. 260-453.00P.

Battelle Institut e.V.: *See*—
Reiner, Roland; KiBing, Wolfgang; Doring, Helga; Koster-Losche, Kari; and Heide, Helmut, 4,322,398, Cl. 424-19.000.

Battelle Memorial Institute: *See*—
Mezey, Eugene J.; and Dinovo, Salvatore T., 4,322,394, Cl. 423-244.000.

Baugh, William D.: *See*—
Horvitz, David; and Baugh, William D., 4,322,355, Cl. 260-340.700.

Baum, Jonathan S., to FMC Corporation. Preparation of esters. 4,322,534, Cl. 546-300.000.

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Baumann, Annegrit; Kiehs, Karl; Hamprecht, Gerhard; Lange, Arno; and Adolphi, Heinrich, to BASF Aktiengesellschaft. 1,2,3,5-Thiatriazolidin-4(2H)-one-1,1-dioxide phosphoric acid derivatives and their use for combating pests. 4,322,413, Cl. 424-200.000.

Baumann, Hans D. Minute flow regulating valve. 4,322,055, Cl. 251-57.000.

Baun, Kenneth W., to Burroughs Corporation. Common front-end control for a peripheral controller connected to a computer. 4,322,792, Cl. 364-200.000.

Baus, Heinz G. Water closet sprayer. 4,321,715, Cl. 4-420.200.

Baxter, Arthur G.: *See*—
Matsuura, Takeshi; Blais, Pierre; Baxter, Arthur G.; and Sourirajan, Srinivasa, 4,322,448, Cl. 426-490.000.

Baxter, John D.; Roberts, James L.; Seeburg, Peter H.; Goodman, Howard M.; and Shine, John, to University of California, The Regents of the. Adrenocorticotropin-lipotropin precursor gene. 4,322,499, Cl. 435-317.000.

Baxter Travenol Laboratories, Inc.: *See*—
Webster, R. Daniel, 4,322,465, Cl. 428-194.000.

Bayer Aktiengesellschaft: *See*—
Boehmke, Gunther, 4,322,312, Cl. 252-356.000.
Freitag, Dieter; and Schmidt, Manfred, 4,322,373, Cl. 260-544.00K.
Jager, Gerhard; Klauke, Erich; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,322,442, Cl. 424-341.000.
Niggemann, Johannes; Kuhle, Engelbert; and Klauke, Erich, 4,322,237, Cl. 71-68.000.
Schmidt, Manfred; Bottenbruch, Ludwig; Freitag, Dieter; and Nouvertne, Werner, 4,322,520, Cl. 528-167.000.
Wagner, Kuno, 4,322,523, Cl. 536-4.000.

Bayly, William I., to AGF Inc. Electrical heating element assembly. 4,322,606, Cl. 219-550.000.

BBC, Brown, Boveri & Company, Limited: *See*—
Menth, Anton; Nagel, Hartmut; and Spinner, Ulrich, 4,322,257, Cl. 148-101.000.

Beane Filter Media, Inc.: *See*—
Beane, Thomas F., 4,322,232, Cl. 55-360.000.

Beane, Thomas F., to Beane Filter Media, Inc. Filter bag and method for suppressing electrostatic charges. 4,322,232, Cl. 55-360.000.

Beardsley, Marilyn J.: *See*—
Rogers, Arthur J., Jr.; and Beardsley, Marilyn J., 4,321,726, Cl. 16-2.000.

Bechmann, Gunter: *See*—
Heeb, Dieter; Bechmann, Gunter; Bergemann, Uwe; Bollert, Volker; and Frenzel, Claus-Dieter, 4,322,037, Cl. 239-337.000.

Bechtel, Wolf D.: *See*—
Schneider, Claus; Weber, Karl-Heinz; Langbein, Adolf; Bechtel, Wolf D.; and Boke, Karin, 4,322,423, Cl. 424-256.000.

Becker, Michael; Renz, Klaus; and Weibelzahl, Manfred, to Siemens Aktiengesellschaft. Monitoring device for the capacitor battery of a d-c filter circuit. 4,322,766, Cl. 361-17.000.

Beckley, Don A., to HITCO. Fusion laminated high-temperature fabric. 4,322,464, Cl. 428-175.000.

Beckman Instruments, Inc.: *See*—
Gropper, Lee; and Franklin, Robert C., 4,322,029, Cl. 233-1.00R.
Jacobson, Kenneth E.; Gutierrez, William S.; and Patterson, Williams G., 4,322,030, Cl. 233-23.00R.
Lillig, John E.; Neeper, Robert K.; and Ashton, Paul J., 4,322,216, Cl. 23-230.00R.

Becton, Dickinson and Company: *See*—
Cromer, Raymond B., 4,322,278, Cl. 204-195.00R.

Beecham Group Limited: *See*—
Gardner, Derek V., 4,322,370, Cl. 260-501.180.

Begovac, Paul C.; and Bruchman, William C., to W. L. Gore & Associates, Inc. Percutaneous conduit having PTFE skirt. 4,321,914, Cl. 128-1.00R.

Beitler, Franz; Maryschka, Gerhard; and Shuster, Heinrich, to U.S. Philips Corporation. Tape guide in a helical scan cassette recorder. 4,322,761, Cl. 360-85.000.

Belcsak, Zoltan: *See*—
Vadas, Zoltan; Belcsak, Zoltan; Luptak, Erno; Palfalvi, Gyorgy; Vasvari, Vilmos; and Wenzel, Bela, 4,321,790, Cl. 60-39.020.

Bell, Kenneth M.; and Trogolo, Joe R., to Texas Instruments Incorporated. N-Channel JFET device compatible with existing bipolar integrated circuit processing techniques. 4,322,738, Cl. 357-22.000.

Bell Telephone Laboratories, Incorporated: *See*—
Baker, Paul A., 4,322,119, Cl. 339-17.0CF.
Beuscher, Hugo J.; Davis, John H.; Ransom, Maurice N.; and Walford, Robert B., 4,322,843, Cl. 370-63.000.
Carbrey, Robert L., 4,322,697, Cl. 333-173.000.
Dwarakanath, Mirmira R.; and Marsh, Douglas G., 4,322,687, Cl. 330-9.000.
El Hamamsy, Mahmoud A.; King, William C.; and Knight, Stephen, 4,322,767, Cl. 361-56.000.
Everhart, Billy M.; and McCullough, Harold E., 4,322,700, Cl. 335-128.000.

Bellinger, Robert M.; and Gray, Michael L., to Phillips Petroleum Company. Natural gas processing. 4,322,225, Cl. 55-27.000.

Bellus, Daniel: *See*—
Martin, Pierre; Greuter, Hans; Steiner, Eginhard; and Bellus, Daniel, 4,322,374, Cl. 260-544.00Y.

Beloit Corporation: *See*—
Kelpin, Thomas G., 4,322,208, Cl. 440-37.000.

Bemis, Alan G.: *See*—
Kuhlmann, George E.; and Bemis, Alan G., 4,322,549, Cl. 562-416.000.

Bendix Corporation, The: *See*—
Myers, William P.; Torzala, Terence A.; and Henneman, John W., 4,322,228, Cl. 55-163.000.

Bennink, Clarence C., to Deere & Company. Hydraulic oil reservoir vent. 4,322,086, Cl. 280-5.00R.

Berendt, Hans U.: *See*—
Wurmli, Albert; and Berendt, Hans U., 4,322,372, Cl. 260-512.00R.

Berezin, Gilbert H.: *See*—
Aldrich, Paul E.; and Berezin, Gilbert H., 4,322,417, Cl. 424-246.000.

Bergemann, Uwe: *See*—
Heeb, Dieter; Bechmann, Gunter; Bergemann, Uwe; Bollert, Volker; and Frenzel, Claus-Dieter, 4,322,037, Cl. 239-337.000.

Berghaus, Klaus; Lehmann, Gerhard; Berghof, Hans-Joachim; and Honecker, Hans-Jurgen, to Keiper Automobiltechnik GmbH & Co. KG. Adjustable hinge mount for a motor vehicle seat. 4,322,112, Cl. 297-362.000.

Berghof, Hans-Joachim: *See*—
Berghaus, Klaus; Lehmann, Gerhard; Berghof, Hans-Joachim; and Honecker, Hans-Jurgen, 4,322,112, Cl. 297-362.000.

Bergman, Carl P., to Whirlco, Inc. Quick release for helically-threaded drive unit. 4,322,022, Cl. 222-327.000.

Bergmann, Richard P.: *See*—
Hartung, Rodney L.; McCann, Dennis L.; Uhre. Larry W.; Bergmann, Richard P.; Hostetter, James A.; and Konrad, Nicholas J., 4,322,168, Cl. 366-15.000.

Berkley & Company, Inc.: *See*—
Foote, Danny R.; and Turner, Susan F., 4,321,854, Cl. 87-6.000.

Berthold, Richard; and Payne, Trevor G., to Sandoz Ltd. Spiro substituted indanones and tetralones. 4,322,437, Cl. 424-316.000.

Bertram, Hans; and Ramesohl, Leo, to Marsteller & Killmann KG. Ball-playing racket. 4,322,076, Cl. 273-73.00D.

Bessho, Michio, to Kawaski Yukon Kabushiki Kaisha. Closed forging press. 4,321,818, Cl. 72-453.020.

Best, Willie H. Infrared gas grill. 4,321,857, Cl. 99-340.000.

Bethlehem Steel Corporation: *See*—
Lamphier, Larry N.; and Meyers, Walter A., 4,322,179, Cl. 405-36.000.

Beuscher, Hugo J.; Davis, John H.; Ransom, Maurice N.; and Walford, Robert B., to Bell Telephone Laboratories, Incorporated. Control information communication arrangement for a time division switching system. 4,322,843, Cl. 370-63.000.

Bhat, Manjeshwar S.: *See*—
Henry, Richard J.; Zackay, Victor F.; and Bhat, Manjeshwar S., 4,322,246, Cl. 75-124.000.

Bibbee, William C.; and Capps, Stanley B. Flowmeter for fluid flow through weirs and parshall flumes. 4,321,826, Cl. 73-215.000.

Bich, Rene, to Societe J.G. Allinquant. Fixing device for telescopic shock-absorber. 4,321,988, Cl. 188-322.110.

Biermann, Peter: *See*—
Feucht, Rudi; Schmidt, Manfred; and Biermann, Peter, 4,322,092, Cl. 280-615.000.

Bilek, F. Thomas, to Texas Instruments Incorporated. Paper alignment and loading apparatus. 4,322,044, Cl. 242-75.400.

Bither, Tom A., Jr.; and McClellan, William R., to Du Pont de Nemours, E. I., and Company. Preparation of furan. 4,322,358, Cl. 260-346.110.

Bixby, James A., to Eastman Technology, Inc. Fast frame rate sensor readout. 4,322,752, Cl. 358-213.000.

Black, Alfred A. Poppet valve spring retainer with integral mechanical adjustable tappet. 4,321,894, Cl. 123-90.540.

Black, Thomas C., to J. P. Stevens and Company Inc. Method for forming a narrow weave from bare elastomeric threads. 4,321,735, Cl. 28-155.000.

Black, William L., to United States of America, Navy. Gas pressurizer. 4,321,954, Cl. 141-329.000.

Blackmore, Kenneth A. E., to Georgia-Pacific Corporation. Drilling fluid composition. 4,322,301, Cl. 252-8.50A.

Blackstone Industries, Inc.: *See*—
Spangler, Paul C.; and Spangler, Searle T., 4,322,711, Cl. 338-153.000.

Blair, Robert H., to RWC Inc. Method for forming a conduit extending through and beyond opposite sides of a housing wall. 4,322,598, Cl. 219-107.000.

Blais, Pierre: *See—*
Matsuura, Takeshi; Blais, Pierre; Baxter, Arthur G.; and Sourirajan, Srinivasa, 4,322,448, Cl. 426-490.000.

Blase, Manfred: *See—*
Wagener, Dietrich; Flockenhaus, Claus; and Blase, Manfred, 4,322,269, Cl. 201-39.000.

Bleymaier, Joseph S.; Farnworth, Wilfred; and Peters, Thomas E., to Morrison-Knudsen Forest Products Company, Inc. Method for feeding and orienting fibrous furnish. 4,322,380, Cl. 264-24.000.

Blizzard, John D., to Dow Corning Corporation. Curable silicone compositions comprising liquid resin and uses thereof. 4,322,518, Cl. 528-15.000.

Blohm & Voss AG: *See—*
Krakow, Heinz; Tomsen, Harald; and Herm, Jurgen, 4,322,596, Cl. 219-73.210.

Blutspendedienst der Landesverbande des Deutschen Roten Kreuzes Niedersachsen: *See—*
Bunnig, Karl, 4,322,403, Cl. 424-85.000.

Bly, Herbert A. Device for dispensing and dispersing liquid additives in shower bath water. 4,322,036, Cl. 239-311.000.

Bobard, Emile, to Bobard, Jeune, a part interest. Tractor load. 4,322,094, Cl. 280-755.000.

Bobard, Jeune: *See—*
Bobard, Emile, 4,322,094, Cl. 280-755.000.

Bochan, John, to General Electric Company. Washing machine. 4,321,809, Cl. 68-207.000.

Boehmke, Gunther, to Bayer Aktiengesellschaft. Process for purification of non-ionic emulsifiers. 4,322,312, Cl. 252-356.000.

Boehringer Ingelheim GmbH: *See—*
Schneider, Claus; Weber, Karl-Heinz; Langbein, Adolf; Bechtel, Wolf D.; and Boke, Karin, 4,322,423, Cl. 424-256.000.
Voss, Gunther; and Gruber, Peter, 4,322,449, Cl. 427-3.000.

Boeing Company, The: *See—*
DeVlieg, Garrett H.; and Valaas, Andrew M., 4,322,809, Cl. 364-565.000.
Howe, Rodney R.; and Ruonavaara, Quentin F., 4,322,460, Cl. 427-426.000.
Stanbery, Billy J., 4,322,571, Cl. 136-255.000.

Boerman, Luis F. Segarra: *See—*
Serra, Felipe S., 4,321,717, Cl. 5-26.00D.

Bohme, Hermann; and Lohse, Georg, to Dr. Ing. Bohme & Co. Photoflood light. 4,322,779, Cl. 362-17.000.

Boke, Karin: *See—*
Schneider, Claus; Weber, Karl-Heinz; Langbein, Adolf; Bechtel, Wolf D.; and Boke, Karin, 4,322,423, Cl. 424-256.000.

Boling, Monte J. Torque triggering clutch. 4,322,186, Cl. 408-139.000.

Bollert, Volker: *See—*
Heeb, Dieter; Bechmann, Gunter; Bergemann, Uwe; Bollert, Volker; and Frenzel, Claus-Dieter, 4,322,037, Cl. 239-337.000.

Bollinger, Joseph M.: *See—*
Machleder, Warren H.; and Bollinger, Joseph M., 4,322,220, Cl. 44-75.000.

Bongard, Philippe: *See—*
Voegtlin, Rene; and Bongard, Philippe, 4,322,204, Cl. 432-152.000.

Bonnabaud, Marcel. Device for the axial uncoiling of wires. 4,322,047, Cl. 242-128.000.

Boone, Luc: *See—*
Houska, Karl H.; Floegel, Lothar; Hauck, Joachim; Hosten, Daniel; Denys, Wilfried; Boone, Luc; and De Vogelaere, Marc, 4,322,280, Cl. 204-207.000.

Borchard, Heinz; and Redlich, Horst, to Licentia Patent-Verwaltungs G.m.b.H. Playback instrument for an information carrier disc. 4,322,841, Cl. 369-270.000.

Bordner, Mauri L. Telephone circuit protector apparatus. 4,322,773, Cl. 361-119.000.

Boroda, Cyril: *See—*
Leslie, Stewart T.; Rhodes, Alan; Boroda, Cyril; and Halpern, Alfred, 4,322,433, Cl. 424-298.000.

Borofsky, Margaret; and Borofsky, Robert L. Adjustable necklace or bracelet. 4,321,804, Cl. 63-2.000.

Borofsky, Robert L.: *See—*
Borofsky, Margaret; and Borofsky, Robert L., 4,321,804, Cl. 63-2.000.

Borsi, Jozsef: *See—*
Korosi, Jeno; Lang, Tibor; Szekely, Jozsef; Andrasi, Ferenc; Zolyomi, Gabor; Borsi, Jozsef; Goldschmidt nee Horvath, Katalin; Hamori, Tamas; Szabo nee Czibula, Gabriella; Meszaros nee Dunai-Kovacs, Zsuzsanna; and Miglecz, Erzsebet, 4,322,346, Cl. 260-239.0BD.

Bosch, Werner, to Siemens Aktiengesellschaft. Electromagnetic relay. 4,322,702, Cl. 335-202.000.

Boser, Ronald J., to Union Special Corporation. Presser foot attachment. 4,321,880, Cl. 112-127.000.

Bossler, Robert B., Jr., to Kaman Aerospace Corporation. Rotary drive flexible coupling. 4,321,805, Cl. 64-19.000.

Bott, Friedrich; and Soobik, Lembit. Circuit arrangement for controlling the operating functions of a broadcast receiver. 4,322,644, Cl. 307-571.000.

Bottenbruch, Ludwig: *See—*
Schmidt, Manfred; Bottenbruch, Ludwig; Freitag, Dieter; and Nouvertne, Werner, 4,322,520, Cl. 528-167.000.

Bouzard, Daniel; Perol, Claude; Stemer, Jacques; Weber, Abraham; and Granatek, Edmund S., to Bristol-Myers Company. Crystalline gluconate salt of m-AMSA and compositions containing same. 4,322,424, Cl. 424-257.000.

Bow, Kenneth E.; and Lyon, Thomas H., to Dow Chemical Co., The. Cable shielding tape and cable. 4,322,574, Cl. 174-107.000.

Bowden, Donald R., to Solar Unlimited, Inc. Single layer volute heat exchanger. 4,321,963, Cl. 165-70.000.

Boyd, William H.: *See—*
Leighton, Stephen B.; and Boyd, William H., 4,321,915, Cl. 128-4.000.

Braak, Dirk J.: *See—*
Grohmann, Erich; and Braak, Dirk J., 4,322,857, Cl. 455-226.000.

Bradley, Earl H. Discharge system for septic tank. 4,321,948, Cl. 137-579.000.

Braithwaite, David G., to Nalco Chemical Company. Solvents for the catalytic production of acrylamide from acrylonitrile and water. 4,322,532, Cl. 546-128.000.

Brake, David G., to British Aerospace. Control device for optical apparatus. 4,322,128, Cl. 350-16.000.

Branch, James W.: *See—*
Holland, Mason P.; Taylor, Lester E.; and Branch, James W., 4,322,049, Cl. 248-154.000.

Brandes, Wilhelm: *See—*
Jager, Gerhard; Klauke, Erich; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,322,442, Cl. 424-341.000.

Brandstrom, Hugo. Cryptosystem. 4,322,577, Cl. 178-22.050.

Brandt, Helmut; Payer, Helga U.; Payer, Michael A.; and Payer, Heike U. Process for the purification of gaseous chlorine. 4,321,795, Cl. 62-54.000.

Bregoli, Lawrence J.: *See—*
Bushnell, Calvin L.; Bregoli, Lawrence J.; and Schroll, Craig R., 4,322,482, Cl. 429-41.000.

Bremen Gemeinnutzige G.m.b.H.: *See—*
Bunnig, Karl, 4,322,403, Cl. 424-85.000.

Bremmer, Bart J.: *See—*
Vrieland, Gail E.; Bremmer, Bart J.; and Crooks, Richard E., 4,322,538, Cl. 546-345.000.

Brewerton, David; and Connell, Peter P. R., to Racal-Dana Instruments Limited. Microprocessor-controlled frequency synthesizer. 4,322,692, Cl. 331-2.000.

Brichima S.p.A.: *See—*
Minisci, Francesco; Maggioni, Paolo; and Citterio, Attilio, 4,322,547, Cl. 560-204.000.

Briese, Leonard A. Coolant control for milling tools. 4,322,189, Cl. 409-136.000.

Briggs, Jack, to Rolls-Royce Limited. Thrust bearing. 4,322,117, Cl. 308-233.000.

Bright, George L., to American Resources Corporation Ltd. Electrode steam generator system for secondary oil recovery. 4,322,603, Cl. 219-278.000.

Brink's France S.A.: *See—*
Sauret, Jacques; and Grosse, Gerard, 4,321,777, Cl. 52-308.000.

Brisson, A. Glen, to Respiratory Care, Inc. Temperature control system with alarm and shut down for non-tracking condition of dual thermometers. 4,322,594, Cl. 219-497.000.

Bristol-Myers Company: *See—*
Bouzard, Daniel; Perol, Claude; Stemer, Jacques; Weber, Abraham; and Granatek, Edmund S., 4,322,424, Cl. 424-257.000.
Buyniski, Joseph P.; and Pircio, Anthony W., 4,322,427, Cl. 424-260.000.
Cundall, Robert L.; and Walker, Derek, 4,322,347, Cl. 260-239.100.
Kaplan, Murray A.; and Granatek, Alphonse P., 4,322,362, Cl. 260-429.00R.
Kaplan, Murray A.; and Granatek, Alphonse P., 4,322,391, Cl. 423-209.000.

Bristol, Robert D. Internal combustion engine with auxiliary combustion chamber. 4,321,904, Cl. 123-559.000.

British Aerospace: *See—*
Brake, David G., 4,322,128, Cl. 350-16.000.

British Broadcasting Corporation: *See—*
Drewery, John O.; and Weston, Martin, 4,322,739, Cl. 358-13.000.
Lord, Arthur V.; Hacking, Kenneth; and Drewery, John O., 4,322,750, Cl. 358-140.000.
Weston, Martin, 4,322,749, Cl. 358-139.000.

British Petroleum Company Limited, The: *See—*
Sutton, Gordon W., 4,322,384, Cl. 422-144.000.

Brokhage, Josef, to Schenk-Filterbau Gesellschaft mit beschrankter Haftung. Fluid filtration apparatus. 4,322,295, Cl. 210-331.000.

Bronstein-Bonte, Irena Y.: *See—*
Land, Edwin H.; Bronstein-Bonte, Irena Y.; and Taylor, Lloyd D., 4,322,489, Cl. 430-213.000.

Brooks, John C.: *See—*
Tolley, Calvert B.; Reinke, Theodore S.; and Brooks, John C., 4,321,730, Cl. 17-71.000.

Brotzler, Roland: *See—*
Manzke, Klaus; and Brotzler, Roland, 4,322,762, Cl. 360-106.000.

Brotzmann, Karl; and Fassbinder, Hans G., to Eisenwerk-Gesellschaft Maximilianshutte mbH. Process for feeding carbon to an iron melt in a converter. 4,322,244, Cl. 75-51.000.

Broughton, Philip, to International Computers Limited. Hierarchical data storage system. 4,322,815, Cl. 364-900.000.

Bruchman, William C.: *See—*
Begovac, Paul C.; and Bruchman, William C., 4,321,914, Cl. 128-1.00R.

Brunner, Erich: *See—*
Deubzer, Bernward; Burkhardt, Jurgen; Brunner, Erich; and Sallersbeck, Konrad, 4,322,517, Cl. 528-14.000.

Brunner, Gerd: *See—*
Peter, Siegfried; and Brunner, Gerd, 4,322,445, Cl. 426-312.000.
Bruns, Klaus: *See—*
Conrad, Jens; Bruns, Klaus; and Upadek, Horst, 4,322,559, Cl. 568-373.000.
Brunswick Corporation: *See—*
Staerzl, Richard E., 4,322,633, Cl. 307-95.000.
Buehler-Miag GmbH: *See—*
Ullner, Klaus, 4,322,803, Cl. 364-473.000.
Buhler, Arthur: *See—*
Abel, Heinz; Hugelshofer, Paul; and Buhler, Arthur, 4,322,415, Cl. 424-226.000.
Builders Concrete, Inc.: *See—*
Sluys, Wesley W., 4,321,882, Cl. 114-266.000.
Bundens, Allan B.; and Schoeneberger, Carl F., to Bundens, Allan B.; and Schoeneberger, Carl F. Data communications terminal. 4,322,854, Cl. 455-5.000.
Bundy Corporation: *See—*
Millar, Barry C.; and Little, Keith W., 4,321,848, Cl. 83-153.000.
Bunker Ramo Corporation: *See—*
Riches, Arthur J.; and Wallace, Robert D., 4,322,121, Cl. 339-89.00M.
Bunnig, Karl, to Blutspendedienst der Landesverbande des Deutschen Roten Kreuzes Niedersachsen; and Bremen Gemeinnutzige G.m.b.H. Method for the preparation of an immune globulin solution suitable for intravenous use. 4,322,403, Cl. 424-85.000.
Burg, Donald E.: *See—*
Ziegler, Kurt, 4,321,811, Cl. 70-356.000.
Burgdorf, Jochen; and Storzel, Karl, to ITT Industries, Inc. Floating-caliper spot-type disc brake. 4,321,984, Cl. 188-73.390.
Burkhardt, Jurgen: *See—*
Deubzer, Bernward; Burkhardt, Jurgen; Brunner, Erich; and Sallersbeck, Konrad, 4,322,517, Cl. 528-14.000.
Burkholder, Harvey Z.: *See—*
Martin, Harlan W.; Burkholder, Harvey Z.; Voran, Willis R.; and Winters, Galen A., 4,321,887, Cl. 119-22.000.
Burmeister, Eugene V.: *See—*
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,322,816, Cl. 364-900.000.
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Burns, Jack L.; and Forte, Link, to Rogers Corporation. Keyboard device. 4,322,587, Cl. 200-5.00R.
Burns, Lyle D.: *See—*
Parlman, Robert M.; and Burns, Lyle D., 4,322,304, Cl. 252-51.50R.
Burow, Kenneth W., Jr., to Eli Lilly and Company. Isoxazolylbenzamides as insecticides. 4,322,429, Cl. 424-272.000.
Burroughs Corporation: *See—*
Baun, Kenneth W., 4,322,792, Cl. 364-200.000.
Davis, Sheila G.; and Franks, Robert E., 4,322,812, Cl. 364-900.000.
Hardwick, John F., 4,322,760, Cl. 360-77.000.
Burroughs Wellcome Co.: *See—*
Vinegar, Ralph; and Wolberg, Gerald, 4,322,411, Cl. 424-180.000.
Burton, Charles G., to Chisholm-Ryder Company, Inc. Grape harvester with cane lifter. 4,321,786, Cl. 56-330.000.
Bushnell, Calvin L.; Bregoli, Lawrence J.; and Schroll, Craig R., to United Technologies Corporation. Electrolyte matrix for molten carbonate fuel cells. 4,322,482, Cl. 429-41.000.
Butin, Henri, to Thomson-CSF. Frequency comparator circuit. 4,322,686, Cl. 328-119.000.
Buyniski, Joseph P.; and Pircio, Anthony W., to Bristol-Myers Company. Analgetic compositions and methods of use. 4,322,427, Cl. 424-260.000.
BYK Gulden Lomberg Chemische Fabrik GmbH: *See—*
Klemm, Kurt; Kruger, Uwe; Rapp, Erich; Wolf, Horst; and Kraas, Ekkehard, 4,322,439, Cl. 424-319.000.
C.G.R. MeV: *See—*
Tronc, Dominique, 4,322,622, Cl. 250-396.0ML.
C. H. Boehringer Sohn: *See—*
Losel, Walter; Esser, Franz; Roos, Otto; Reichl, Richard; Kuhn, Franz J.; and Traunecker, Werner, 4,322,418, Cl. 424-248.570.
C-I-L Inc.: *See—*
Marz, Horst F., 4,321,728, Cl. 17-41.000.
Cada, Frank E.: *See—*
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Caillier, Edgard H. Automatic hopper unloading device. 4,321,872, Cl. 105-241.200.
Cain, David E., to Halliburton Company. Density measuring apparatus. 4,321,829, Cl. 73-433.000.
Calabrese, Frank A. Data relay system. 4,322,849, Cl. 375-3.000.
Campbell, Dan R.: *See—*
Shanks, Bruce E.; and Campbell, Dan R., 4,322,784, Cl. 362-306.000.
Campbell, James A., to Red Valve Company, Inc. Pinch valve. 4,322,054, Cl. 251-5.000.
Campbell, William H. Surgical drape support and oxygen supply device. 4,321,917, Cl. 128-205.260.
Canadian General Electric Company Ltd.: *See—*
Trussler, Ronald C.; Reiten, Stanley V.; and Wyeth, William A., 4,322,668, Cl. 318-434.000.
Canadian Patents & Dev. Ltd.: *See—*
Matsuura, Takeshi; Blais, Pierre; Baxter, Arthur G.; and Sourirajan, Srinivasa, 4,322,448, Cl. 426-490.000.
Moore, William J. M.; and Kusters, Norbert L., 4,322,679, Cl. 324-62.000.
Cane, Giuseppe: *See—*
Palazzetti, Mario; and Cane, Giuseppe, 4,321,798, Cl. 62-79.000.
Canon Kabushiki Kaisha: *See—*
Hashimoto, Shigeru; and Sumi, Akiyasu, 4,322,154, Cl. 354-286.000.
Ito, Susumu; and Ban, Mikichi, 4,322,130, Cl. 350-288.000.
Kamata, Shigeru; and Isobe, Takashi, 4,322,150, Cl. 354-195.000.
Shimizu, Masami; Uchidoi, Masanori; Date, Nebuaki; and Aizawa, Hiroshi, 4,322,146, Cl. 354-60.00E.
Suzuki, Ryoichi; and Uchiyama, Takashi, 4,322,144, Cl. 354-43.000.
Takimoto, Hiroyuki; and Toyama, Masamichi, 4,322,140, Cl. 352-91.00C.
Yamada, Tateo; Harigaya, Isao; Ogawa, Yukio; and Hirohata, Michio, 4,322,145, Cl. 354-50.000.
Yoshikawa, Ryoichi, 4,322,148, Cl. 354-128.000.
Capots, Larry H.; George, James; and Morelli, Luigi. Identification of materials using their complex dielectric response. 4,322,678, Cl. 324-61.00R.
Capozza, Richard C., to ALZA Corporation. Erodible device comprising surfactant for modifying the rate of erosion of the device. 4,322,323, Cl. 424-78.000.
Capps, Stanley B.: *See—*
Bibbee, William C.; and Capps, Stanley B., 4,321,826, Cl. 73-215.000.
Caprino, Joseph C., to General Electric Company. Process for formulating silicone rubber products. 4,322,320, Cl. 523-212.000.
Capuano, Terry D.: *See—*
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Carbrey, Robert L., to Bell Telephone Laboratories, Incorporated. Sampling filter for reducing aliasing distortion. 4,322,697, Cl. 333-173.000.
Cardinal, Rene E., to RCA, Inc. Apparatus for resistance welding of an electro-optic device housing. 4,322,599, Cl. 219-119.000.
Carl, John R., to Paul-Munroe Hydraulics, Inc. Filter assembly. 4,322,290, Cl. 210-133.000.
Carnes, Donald W., to Electro-Therm, Inc. Method of securing a metal sheathed electric heating element. 4,321,744, Cl. 29-523.000.
Carroll, Elmer W.; Negi, Virendra S.; and Peters, Arthur, to Honeywell Information Systems Inc. Self-evaluation system for determining the operational integrity of a data processing system. 4,322,846, Cl. 371-16.000.
Carroll, Robert J., to Eaton Corporation. Electronic fuel control system for a gas turbine engine. 4,321,791, Cl. 60-39.14R.
Carson, Richard G.; McCall, Frank B.; and Stanley, Alistair J., to Ferranti Limited. Electrical resistors. 4,322,710, Cl. 338-61.000.
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Hartung, Rodney L.; McCann, Dennis L.; Uhre, Larry W.; Bergmann, Richard P.; Hostetter, James A.; and Konrad, Nicholas J., 4,322,168, Cl. 366-15.000.
Cashin Systems Corp.: *See—*
Dillon, Oscar W., 4,321,847, Cl. 82-77.000.
Casio Computer Co., Ltd.: *See—*
Nakazawa, Eiji, 4,322,830, Cl. 368-29.000.
Cassella Aktiengesellschaft: *See—*
Tappe, Horst; Kindler, Horst; Roth, Kurt; and Ong, Sien L., 4,322,213, Cl. 8-449.000.
Cassinelli, Giuseppe; Forenza, Salvatore; Ripamonti, Maria C.; and Ruggieri, Daniela, to Farmitalia Carlo Erba S.p.A. Anthracycline glycosides, their preparation, use and compositions thereof. 4,322,412, Cl. 424-180.000.
Castellucci, Nicholas T.; Ostrowski, John S.; and Grunewalder, John F., to PPG Industries, Inc. Epoxy derived resins containing amino or mercapto substituted azole functionality and compositions containing same. 4,322,459, Cl. 428-386.000.
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Hershock, Bruce N., 4,321,813, Cl. 72-76.000.
Hodge, Norman J.; and Logsdon, John S., 4,322,052, Cl. 248-420.000.
Koch, Franklin O., Jr., 4,321,990, Cl. 192-13.00R.
Stevens, Samuel B., 4,322,039, Cl. 242-4.0BE.
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Cayn, Henri P. M.; and Donabin, Claude J., to Compangie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme). Receiving hopper for documents. 4,322,068, Cl. 271-207.000.
Cech, Miloslav; Vasicek, Vladimir; and Kuda, Vladimir, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Apparatus for controlling pressure fluid distribution, particularly in jet looms. 4,321,947, Cl. 137-556.000.
Celanese Corporation: *See—*
Williams, Albert G., 4,322,521, Cl. 528-182.000.
Cem Compagnie Electro-Mecanique: *See—*
Delassus, Jean, 4,321,958, Cl. 164-468.000.
Cenna, John J., III. Music stand. 4,321,874, Cl. 108-99.000.
Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie: *See—*
Crahay, Jean, 4,322,600, Cl. 219-121.0LK.
Pirlet, Robert A., 4,322,627, Cl. 250-561.000.
Centro Ricerche Fiat S.p.A.: *See—*
Palazzetti, Mario; and Cane, Giuseppe, 4,321,798, Cl. 62-79.000.

Cetec Corporation: *See—*
Mock, Donald E., 4,322,234, Cl. 55-440.000.
Chabat-Courrede, Jean, to Electricite de France (Service National). Damped fluid pressure relief valve. 4,321,945, Cl. 137-514.700.
Chaconas, Anthony. Nail polish remover. 4,321,936, Cl. 132-75.000.
Challeton, Didier; Daval, Jacques; Ferrand, Bernard; and Moriceau, Hubert, to Commissariat a l'Energie Atomique. Process for regulating to desired values the dimensions of the bubbles of magnetic bubble elements. 4,322,454, Cl. 427-128.000.
Chamran, Morteza M.; Scott, Larkin B.; and Williams, Paul B., to Perkin-Elmer Corporation, The. Safe memory system for a spectrophotometer. 4,322,807, Cl. 364-498.000.
Chao, James C.; and Huibers, Derk T. A., to Hydrocarbon Research, Inc. Catalytic hydrogenation of glucose to produce sorbitol. 4,322,569, Cl. 568-863.000.
Chapman, Ronald R.: *See—*
Lew, Hyok S.; and Chapman, Ronald R., 4,322,056, Cl. 251-88.000.
Chappell, Ian C.; and Balog, G. George, to GTE Products Corporation. Lamp with improved mount. 4,322,783, Cl. 362-217.000.
Charlebois, Leonard J., to Northern Telecom Limited. Encapsulation of telecommunications cable splices. 4,322,573, Cl. 174-72.00R.
Charlesworth, Clayton D.: *See—*
Patrician, Thomas J.; Mullendore, James A.; Weaver, Theodore L.; and Charlesworth, Clayton D., 4,322,248, Cl. 75-245.000.
Chase, Paul H., to Combustion Engineering, Inc. Fault detection in a flame scanner. 4,322,723, Cl. 340-578.000.
Chatterjee, Ananda M., to Shell Oil Company. Fatty acid amide nucleating agents for butene-1 polymer compositions. 4,322,503, Cl. 524-229.000.
Chen, Hsien-Jer; Liu, Tin-Yin; Sung, Hsien-Yi; and Su, Jong-Ching. Preparation of chemically phosphorylated soy proteins and the products therefrom. 4,322,344, Cl. 260-123.500.
Chern, Yenn J. Baby pillow. 4,321,718, Cl. 5-437.000.
Chevron Research Company: *See—*
Lewis, Robert A., 4,322,305, Cl. 252-51.50A.
Chiba, Yoshio: *See—*
Nakamura, Takashi; and Chiba, Yoshio, 4,322,662, Cl. 315-383.000.
Childers, Thomas W.: *See—*
Johnson, Dale V.; and Childers, Thomas W., 4,321,751, Cl. 33-126.500.
Ching, Ta Y.: *See—*
Olson, Daniel R.; and Ching, Ta Y., 4,322,455, Cl. 427-160.000.
Chisholm-Ryder Company, Inc.: *See—*
Burton, Charles G., 4,321,786, Cl. 56-330.000.
Christain, Ronald W.; and Slingsby, Barry, to Stromberg-Carlson Corporation. Multifunction telephone with message information and control information circuits for connecting stations and common equipment in a telephone network. 4,322,581, Cl. 179-18.0ES.
Christel, Conrad, Jr., to Pall Corporation. Adsorbent fractionators with electronic sequence timer cycle control and process. 4,322,223, Cl. 55-18.000.
Christopher, Chris J.: *See—*
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,322,816, Cl. 364-900.000.
Chrzanowski, Edward J., to United States of America, Navy. Controlled delay gate stealer. 4,322,730, Cl. 343-18.00E.
Chumley, Calvin L.; Hendrickson, William W.; and Mace, Leon P., to UMC Industries, Inc. Slide selector switch device. 4,322,588, Cl. 200-5.00A.
Chupp, John P., to Monsanto Company. Process for producing N-(halomethyl)acylamides. 4,322,553, Cl. 564-209.000.
Ciavatta, Armand. Friction rock stabilizer and installation lubricating cement apparatus and method. 4,322,183, Cl. 405-261.000.
Ciba-Geigy Corporation: *See—*
Abel, Heinz; Hugelshofer, Paul; and Buhler, Arthur, 4,322,415, Cl. 424-226.000.
Bader, Rolf; and Reinehr, Dieter, 4,322,536, Cl. 546-314.000.
Habicht, Ernst; Ferrini, Pier G.; and Sallmann, Alfred, 4,322,431, Cl. 424-273.00B.
Karrer, Friedrich, 4,322,531, Cl. 546-22.000.
Kuster, Werner, 4,322,529, Cl. 544-343.000.
Maier, Ludwig; and Durr, Dieter, 4,322,375, Cl. 260-951.000.
Martin, Pierre; Greuter, Hans; Steiner, Eginhard; and Bellus, Daniel, 4,322,374, Cl. 260-544.00Y.
Muller, Beat; Kump, Wilhelm; and Wacker, Oskar, 4,322,419, Cl. 424-250.000.
Pissiotas, Georg; and Rempfler, Hermann, 4,322,241, Cl. 71-94.000.
Rasberger, Michael, 4,322,527, Cl. 544-157.000.
Rody, Jean, 4,322,337, Cl. 524-100.000.
Roloff, Achim; and Farooq, Saleem, 4,322,432, Cl. 424-275.000.
Rosenberger, Siegfried, 4,322,303, Cl. 252-46.600.
Sallmann, Alfred; and Baschang, Gerhard, 4,322,436, Cl. 424-309.000.
Wurmli, Albert; and Berendt, Hans U., 4,322,372, Cl. 260-512.00R.
Cillichemie Ernst Vogelman GmbH & Co.: *See—*
Siller, Rudi, 4,321,938, Cl. 137-99.000.
Citterio, Attilio: *See—*
Minisci, Francesco; Maggioni, Paolo; and Citterio, Attilio, 4,322,547, Cl. 560-204.000.
Clarion Co., Ltd.: *See—*
Murakami, Yoshiaki; Ohmori, Akira; and Ohhara, Seishichi, 4,322,780, Cl. 362-31.000.
Clark, Donald Y. Grain stirring apparatus. 4,322,171, Cl. 366-261.000.
Clark, William T., II. Process for suppressing immunity to transplants. 4,321,918, Cl. 128-214.00R.
Claussen, Nils; Jahn, Jurgen; and Petzow, Gunter, to Max Planck Gesellschaft. Process for the preparation of dispersion ceramics. 4,322,249, Cl. 501-88.000.
Claxton, Raymond J. Method for submerging entraining, melting and circulating metal charge in molten media. 4,322,245, Cl. 75-68.00R.
Clear, Elmer E., to Phillips Petroleum Company. Methods of using aqueous gels. 4,321,968, Cl. 166-275.000.
Co-Poly-Ex Corporation: *See—*
Vollman, Charles K., 4,322,048, Cl. 248-97.000.
Coal Industry (Patents) Limited: *See—*
Annetts, Michael J., 4,322,725, Cl. 340-595.000.
Taylor, Timothy P.; Dowell, Joseph; and Haskew, Francis A., 4,322,113, Cl. 299-1.000.
Coats & Clark, Inc.: *See—*
Einhorn, Ruediger, 4,322,194, Cl. 411-30.000.
Coburn, Joel T.: *See—*
Huber, Calvin O.; Schick, Karl G.; and Coburn, Joel T., 4,322,215, Cl. 23-230.00R.
Coca-Cola Company, The: *See—*
Barrash, Marshall J., 4,322,016, Cl. 220-270.000.
Colby, William. Vehicle body-and-frame alignment apparatus. 4,321,754, Cl. 33-180.0AT.
Cole, Herald J.: *See—*
Debono, Manuel; Merkel, Kurt E.; Weeks, Robert E.; and Cole, Herald J., 4,322,406, Cl. 424-118.000.
Colgate-Palmolive Company: *See—*
Silvis, Salvatore J., 4,322,367, Cl. 260-459.00R.
Collard, Thomas H., Jr. Jet operated heat pump. 4,321,801, Cl. 62-238.400.
Collier, Albert F.; and Peters, David L., to Singer Company, The. Apparatus for providing a simulated view to hand held binoculars. 4,322,726, Cl. 340-705.000.
Collins, Harold E., II: *See—*
Mikus, William S.; Cozza, Anthony J.; Collins, Harold E., II; and Mellinger, Gerald A., 4,321,876, Cl. 110-171.000.
Collins, Paul W.; and Pappo, Raphael, to G. D. Searle & Co. 4,5-Unsaturated prostanoic acid derivatives. 4,322,543, Cl. 556-436.000.
Columbian Chemicals Company: *See—*
Dotson, Anderson O., Jr.; and Wadsworth, Francis T., 4,322,565, Cl. 568-697.000.
Combustion Engineering, Inc.: *See—*
Chase, Paul H., 4,322,723, Cl. 340-578.000.
Mikus, William S.; Cozza, Anthony J.; Collins, Harold E., II; and Mellinger, Gerald A., 4,321,876, Cl. 110-171.000.
Nelson, Hugh W., 4,322,266, Cl. 162-30.00K.
Combustion Research Corporation: *See—*
Johnson, Arthur C. W., 4,322,229, Cl. 55-179.000.
Comerford, Liam D.; Harper, John S.; and Lean, Eric G., to International Business Machines Corporation. Self-aligned plug connector for optical fibers. 4,322,127, Cl. 350-96.210.
Commissariat a l'Energie Atomique: *See—*
Challeton, Didier; Daval, Jacques; Ferrand, Bernard; and Moriceau, Hubert, 4,322,454, Cl. 427-128.000.
Eloy, Jean-Francois; and Unsold, Eberhard, 4,322,629, Cl. 250-299.000.
Gasc, Henri, 4,321,856, Cl. 92-48.000.
Vieira, David D.; Dinard, Jacques; and Stossel, Alain, 4,322,683, Cl. 324-225.000.
Communications Satellite Corporation: *See—*
Fleming, Paul L.; and Smith, Thane, 4,322,695, Cl. 333-104.000.
Snyder, John S., Jr., 4,322,848, Cl. 371-43.000.
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Cayn, Henri P. M.; and Donabin, Claude J., 4,322,068, Cl. 271-207.000.
Conlon, Lawrence E., to Monsanto Company. Process for the continuous extrusion forming of a plastic double-walled foam-core conduit. 4,322,260, Cl. 156-244.120.
Connell, Peter P. R.: *See—*
Brewerton, David; and Connell, Peter P. R., 4,322,692, Cl. 331-2.000.
Conoco Inc.: *See—*
Grimes, Steven D.; and Mihalcik, Thomas J., 4,321,828, Cl. 73-351.000.
Leach, Bruce E., 4,322,566, Cl. 568-804.000.
Waters, Kenneth H., 4,321,981, Cl. 181-119.000.
Conrad, Jens; Bruns, Klaus; and Upadek, Horst, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). 4(5)-Acetyl-9,9-dimethyltricyclo-[4,4,0,$1^{8,10}$]-undec-1-ene, its preparation and use in perfumery compositions and as an odorant. 4,322,559, Cl. 568-373.000.
Consolidated Foods Corporation: *See—*
Sloan, Donald A.; and Perkins, Carroll G., 4,322,614, Cl. 235-458.000.
Consortium fur Elektrochemische Industrie GmbH: *See—*
Hafner, Walter; Markl, Erich; Eibel, Ludwig; Kreis, Gerhard; Samrowski, Dietrich; Wick, Manfred; Deubzer, Bernward; and Friedrich, Wilhelm, 4,322,473, Cl. 428-391.000.
Conti, Vincent N., to Dairy Cap Corporation. Threaded plastic bottle cap. 4,322,012, Cl. 215-344.000.
Control Devices, Incorporated: *See—*
Krechel, Joseph L.; and Purvis, Michael J., 4,321,940, Cl. 137-116.000.
Cook, Charles F.; and Hays, George E., to Phillips Petroleum Company. Gas purification. 4,322,227, Cl. 55-68.000.

Cooke, Paul E.: *See*—
Gleason, Robert J.; Richman, Mark; and Cooke, Paul E., 4,322,392, Cl. 423-242.000.
Cooper, Evert S., to International Business Machines Corporation. Electric switch operation monitoring circuitry. 4,322,769, Cl. 361-88.000.
Cooper, Julius; and Tilbor, Neil, to Ideal Toy Corporation. Race set with detour. 4,322,079, Cl. 273-86.00B.
Cornelissen, Gerardus A. A. F.; Gerrits, Hendrik J.; and Kamerbeek, Evert M. H., to U.S. Philips Corporation. X-ray tube having a magnetically supported rotary anode. 4,322,624, Cl. 250-406.000.
Corning Glass Works: *See*—
Heimbach, Kim P.; and Johnson, Ronald E., 4,322,467, Cl. 428-200.000.
Cottam, Spencer D., to T. C. Mfg. Co., Inc. Apparatus for wrapping conduits with sheet material. 4,322,262, Cl. 156-392.000.
Coulter Systems Corporation: *See*—
Kuehnle, Manfred R.; Manhardt, John R.; and Wright, Malor, 4,322,488, Cl. 430-103.000.
Weber, Harold J., 4,322,786, Cl. 363-21.000.
Courier de Mere, Henri, to Mere, Malleray & Cie. Static converter of symmetrical type. 4,322,789, Cl. 363-133.000.
Covington, Wayne F.: *See*—
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,322,816, Cl. 364-900.000.
Cozza, Anthony J.: *See*—
Mikus, William S.; Cozza, Anthony J.; Collins, Harold E., II; and Mellinger, Gerald A., 4,321,876, Cl. 110-171.000.
Crahay, Jean, to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie. Method and apparatus for forming microcavities on the surface of a rolling mill roll. 4,322,600, Cl. 219-121.0LK.
Cramer, Jurgen: *See*—
Jensen, Harald; Schmidt, Erwin; Mitzlaff, Michael; Cramer, Jurgen; Pistorius, Rudolf; Pietsch, Hartmut; and Dehmer, Klaus, 4,322,271, Cl. 204-73.00R.
Crawford, Wheeler C.: *See*—
Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., 4,322,556, Cl. 564-423.000.
Crisis, John O. E.: *See*—
Zavada, Michael J.; Crisis, John O. E.; and Turgeon, Milton R., 4,322,192, Cl. 410-81.000.
Cromer, Raymond B., to Becton, Dickinson and Company. Gas detection unit. 4,322,278, Cl. 204-195.00R.
Crookall, John R.: *See*—
Fowell, Alan; Shaw, Trevor W.; and Crookall, John R., 4,322,595, Cl. 219-69.00C.
Crooks, Richard E.: *See*—
Vrieland, Gail E.; Bremmer, Bart J.; and Crooks, Richard E., 4,322,538, Cl. 546-345.000.
Crounse, Nathan N.; and Schmidt, Paul J., to Sterling Drug Inc. Indolyl phthalide compounds. 4,322,352, Cl. 260-326.14R.
Crown Zellerbach Corporation: *See*—
Reba, Imants, 4,322,027, Cl. 226-97.000.
Cummins Engine Company: *See*—
Kasting, Edward W., 4,321,896, Cl. 123-195.00A.
Cundall, Robert L.; and Walker, Derek, to Bristol-Myers Company. 2-Carbamoyloxymethyl-penicillin derivatives. 4,322,347, Cl. 260-239.100.
Curry, John J. Tamper proof lid. 4,322,010, Cl. 215-256.000.
Custom Plastics, Inc.: *See*—
Tisbo, Cosmo N.; and Tisbo, Thomas A., 4,321,769, Cl. 47-33.000.
Dagani, Michael J.: *See*—
Nelson, Gunner E.; and Dagani, Michael J., 4,322,539, Cl. 548-342.000.
Dairy Cap Corporation: *See*—
Conti, Vincent N., 4,322,012, Cl. 215-344.000.
Dammann, Peter; Schippers, Heinz; Turk, Herbert; and Schiminski, Herbert, to BARMAG Barmer Maschinenfabrik AG. Process for spinning of core/mantle yarns and yarn products. 4,321,789, Cl. 57-224.000.
Damon Corporation: *See*—
Lim, Franklin; and Moss, Richard D., 4,322,311, Cl. 252-316.000.
Daniels, Herbert E.; and Randall, Harvey G., to General Electric Company. Electron emission regulator for an x-ray tube filament. 4,322,625, Cl. 250-409.000.
Danko, Peter J. Support structure. 4,321,875, Cl. 108-150.000.
Dante, Mark F., to Shell Oil Company. Low-temperature curable saturated epoxy resin compositions. 4,322,321, Cl. 523-454.000.
Date, Nebuaki: *See*—
Shimizu, Masami; Uchidoi, Masanori; Date, Nebuaki; and Aizawa, Hiroshi, 4,322,146, Cl. 354-60.00E.
Daval, Jacques: *See*—
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Davis, Charles M., Jr.; and Giallorenzi, Thomas G., to Dynamic Systems, Inc. Fiber optic accelerometer and method of measuring inertial force. 4,322,829, Cl. 367-178.000.
Davis, George W.; Kulzer, Hank; and Nielsen, Anker, to Inner-Tite Corporation. Methods and apparatus for relining service pipe. 4,321,740, Cl. 29-402.090.
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Deaton, David W. Medical receptacle with disposable liner assembly. 4,321,922, Cl. 128-276.000.
Debiase, Bennet W.; Ryder, Harold W.; Silvestri, Pasquale; and Whalen, John M., to Olin Corporation. Quench tank steering roll assembly. 4,322,060, Cl. 266-89.000.
Debono, Manuel, to Eli Lilly and Company. Pseudo-aglycone of actaplanin. 4,322,343, Cl. 260-112.50R.
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DEC International Inc.: *See*—
Hazen, Gretz L., 4,321,860, Cl. 99-453.000.
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Bennink, Clarence C., 4,322,086, Cl. 280-5.00R.
Fox, Robert E., 4,322,034, Cl. 239-155.000.
Teijido, Joseph A.; and Vogelaar, Bernard F., 4,321,991, Cl. 192-0.034.
Degussa Aktiengesellschaft: *See*—
Kleemann, Axel; Martens, Jurgen; and Weigel, Horst, 4,322,552, Cl. 564-198.000.
Dehmer, Klaus: *See*—
Jensen, Harald; Schmidt, Erwin; Mitzlaff, Michael; Cramer, Jurgen; Pistorius, Rudolf; Pietsch, Hartmut; and Dehmer, Klaus, 4,322,271, Cl. 204-73.00R.
Deibert, Albert D.: *See*—
Traverse, Eugene F.; and Deibert, Albert D., 4,321,966, Cl. 166-245.000.
De Jule, Michael; Sobel, Alan; Meyer, Ralph L.; and Glaser, David, to Lucitron, Inc. Gas-discharge devices and display panels. 4,322,659, Cl. 315-169.100.
de Klein, Willem J., to Akzona Incorporated. Process for the addition of a chlorinated methane containing at least three chlorine atoms to an ethylenically unsaturated hydrocarbon. 4,322,570, Cl. 570-257.000.
Delassus, Jean, to Cem Compagnie Electro-Mecanique. Electromagnetic inductor for generating a helical field. 4,321,958, Cl. 164-468.000.
Delatorre, Leroy C. Capacitive pressure sensor. 4,322,775, Cl. 361-283.000.
Delight, Arthur, to Art Delight Construction. Shear wall anchoring. 4,321,776, Cl. 52-167.000.
Dell, Bryce D.; and Waineo, Glenn B., to Ford Motor Company. Conveying and accumulating system for rolling elongated articles. 4,321,995, Cl. 198-459.000.
deMey, Charles F., II, to Perkin-Elmer Corporation, The. Monochromator. 4,322,166, Cl. 356-334.000.
Denys, Wilfried: *See*—
Houska, Karl H.; Floegel, Lothar; Hauck, Joachim; Hosten, Daniel; Denys, Wilfried; Boone, Luc; and De Vogelaere, Marc, 4,322,280, Cl. 204-207.000.
Deposition Technology, Inc.: *See*—
Meckel, Nathan K.; and Meckel, Benjamin B., 4,322,276, Cl. 204-192.00P.
de Putter, Jan A.; and Kortenoeven, Johannes, to Oce-van der Grinten N.V. Electrophotographic process involving double charging. 4,322,486, Cl. 430-31.000.
Derr, George A. Composite vent window and rear-view mirror. 4,322,132, Cl. 350-307.000.
Desbois, Michel; and Soula, Gerard, to Rhone-Poulenc Industries. Preparation of alkyl cyanoacetates. 4,322,369, Cl. 260-465.400.
de Sousa, Manuel E. X. Die finish-cutting machine. 4,322,191, Cl. 409-292.000.
Deubzer, Bernward; Burkhardt, Jurgen; Brunner, Erich; and Sallersbeck, Konrad, to Wacker-Chemie GmbH. Hydrophilic, crosslinked, modified organopolysiloxanes and process for preparing the same. 4,322,517, Cl. 528-14.000.
Deubzer, Bernward: *See*—
Hafner, Walter; Markl, Erich; Eibel, Ludwig; Kreis, Gerhard; Samrowski, Dietrich; Wick, Manfred; Deubzer, Bernward; and Friedrich, Wilhelm, 4,322,473, Cl. 428-391.000.
Devienne, Fernand M. Emitter-receiver panel having high radiant energy efficiency. 4,321,910, Cl. 126-439.000.
DeVlieg, Garrett H.; and Valaas, Andrew M., to Boeing Company, The. Method and apparatus for generating nose wheel speed signals. 4,322,809, Cl. 364-565.000.
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Houska, Karl H.; Floegel, Lothar; Hauck, Joachim; Hosten, Daniel; Denys, Wilfried; Boone, Luc; and De Vogelaere, Marc, 4,322,280, Cl. 204-207.000.
Diamond International Corporation: *See*—
Struble, Glenn E., 4,322,000, Cl. 206-387.000.
Diamond, S. Elliot: *See*—
Tovrog, Benjamin S.; Diamond, S. Elliot; and Mares, Frank, 4,322,562, Cl. 568-401.000.
Diamond Shamrock Corporation: *See*—
Elliott, Douglas R., 4,322,251, Cl. 134-11.000.
Diamondis, Peter J. Camera setting calculator for underwater color photography. 4,322,607, Cl. 235-64.700.
Dick, John O.: *See*—
Abadie, Erwin I.; Dick, John O.; and Forrester, Howard M., 4,321,871, Cl. 102-214.000.

Didier Engineering GmbH.: *See*—
Wagener, Dietrich; Flockenhaus, Claus; and Blase, Manfred, 4,322,269, Cl. 201-39.000.
Diederich, Walter J., to Gillette Company, The. Gas lighter powered curling device. 4,321,934, Cl. 132-37.00R.
Diederichs, Willi: *See*—
Schwab, Max; Heinen, Peter; Diederichs, Willi; Gossens, Peter; Ohloff, Fritz-Gunter; and Minkenberg, Hubert, 4,321,843, Cl. 76-107.00A.
Dikeman, Roxane N., to Mallinckrodt, Inc. Process for preparing Limulus lysate. 4,322,217, Cl. 23-230.00B.
Dill, Walter R., to Halliburton Company. Retarding acidizing fluids. 4,322,306, Cl. 252-8.55C.
Dillon, Oscar W., to Cashin Systems Corp. Continuous cold cut slicing machine. 4,321,847, Cl. 82-77.000.
Dimitrios, James T.: *See*—
Mezera, John R.; Dimitrios, James T.; and Phillips, Graham R., 4,322,630, Cl. 290-40.00C.
Dimov, Peter S.; Pavlov, Georgi N.; Stoyanov, Atanas N.; and Nankinov, Ivan D., to DSO "Bulgarplod". Fruit and vegetable processing apparatus. 4,321,863, Cl. 99-470.000.
Dinard, Jacques: *See*—
Vieira, David D.; Dinard, Jacques; and Stossel, Alain, 4,322,683, Cl. 324-225.000.
Dinovo, Salvatore T.: *See*—
Mezey, Eugene J.; and Dinovo, Salvatore T., 4,322,394, Cl. 423-244.000.
Director, National U.S. Government, Security Agency: *See*—
Turpin, Terry M., 4,322,134, Cl. 350-361.000.
Dischert, Robert A.; and Walter, James M., to RCA Corporation. Rapid synchronization of information on separate recorded mediums. 4,322,747, Cl. 358-127.000.
Discovision Associates: *See*—
Mickleson, Lee; and Olson, Eric V., 4,322,837, Cl. 369-44.000.
Disney, Fredrick G. Saw fence. 4,322,066, Cl. 269-304.000.
Displayco: *See*—
Robertson, David, 4,322,005, Cl. 211-49.00S.
Dixie Yarns, Inc.: *See*—
Alston, Otis B., 4,321,788, Cl. 57-58.950.
Dixon, Raymond F. Degreasing apparatus. 4,321,712, Cl. 4-256.000.
Dlugolecki, Jacek: *See*—
Frontczak, Stanisław, 4,322,443, Cl. 426-28.000.
Dr. Ing. Bohme & Co.: *See*—
Bohme, Hermann; and Lohse, Georg, 4,322,779, Cl. 362-17.000.
Dodge, John H.; and Ernst, Larry M., to International Business Machines Corporation. Automatic indirect testing to verify operational control. 4,322,847, Cl. 371-20.000.
Doi, Kikuo: *See*—
Minowa, Junichiro; Fujii, Yohji; Aoyama, Tsutomu; and Doi, Kikuo, 4,322,126, Cl. 350-96.200.
Doiron, Gerald J. Fly tyer's vise. 4,322,065, Cl. 269-254.00R.
Domitrowich, Joseph R.: *See*—
Lee, Yong K.; and Domitrowich, Joseph R., 4,322,675, Cl. 323-277.000.
Donabin, Claude J.: *See*—
Cayn, Henri P. M.; and Donabin, Claude J., 4,322,068, Cl. 271-207.000.
Donaldson Company, Inc.: *See*—
Schoen, Donald W.; and Klug, Jerry J., 4,322,230, Cl. 55-316.000.
Doring, Helga: *See*—
Reiner, Roland; KiBing, Wolfgang; Doring, Helga; Koster-Losche, Kari; and Heide, Helmut, 4,322,398, Cl. 424-19.000.
Dorn, Norman E.: *See*—
Michaelsen, Marcus H.; and Dorn, Norman E., 4,321,889, Cl. 119-82.000.
Dotson, Anderson O., Jr.; and Wadsworth, Francis T., to Columbian Chemicals Company. Process for purifying ethers. 4,322,565, Cl. 568-697.000.
Doty, Francis D. Sub-basement sensible heat storage for solar energy. 4,321,962, Cl. 165-18.000.
Dougherty, Thomas J.: *See*—
Frailing, Charles E.; Dougherty, Thomas J.; and Johnson, Richard T., 4,322,685, Cl. 324-429.000.
Dow Chemical Co., The: *See*—
Bow, Kenneth E.; and Lyon, Thomas H., 4,322,574, Cl. 174-107.000.
Ellebracht, Stephen R.; and Fairless, Charles M., 4,322,165, Cl. 356-316.000.
Giacobbe, Thomas J.; and White, Halbert C., 4,322,356, Cl. 260-343.30R.
Martin, Patrick H., 4,322,456, Cl. 427-195.000.
Vrieland, Gail E.; Bremmer, Bart J.; and Crooks, Richard E., 4,322,538, Cl. 546-345.000.
Wilson, David A.; and Griffin, Freddie, Jr., 4,322,361, Cl. 260-429.00J.
Dow Corning Corporation: *See*—
Blizzard, John D., 4,322,518, Cl. 528-15.000.
Dowell, Joseph: *See*—
Taylor, Timothy P.; Dowell, Joseph; and Haskew, Francis A., 4,322,113, Cl. 299-1.000.
Drabb, Thomas W., Jr.: *See*—
Addor, Roger W.; and Drabb, Thomas W., Jr., 4,322,422, Cl. 424-251.000.
Drabowitch, Serge, to Thomson-CSF. Disk-type ultra-high frequency antenna array with its supply device and the application thereof to angular deviation measurement radars. 4,322,731, Cl. 343-895.000.
Dragoco Inc.: *See*—
Yuhas, Edward R., 4,322,400, Cl. 424-59.000.
Drake, Charles A., to Phillips Petroleum Company. Regeneration of a ruthenium containing hydrogenation catalyst. 4,322,315, Cl. 252-415.000.
Drake, Cyril F., to International Standard Electric Corporation. Potassium fluoroborate silicate glasses. 4,322,500, Cl. 501-77.000.
Drapeau, Donald F., to Hi-G Incorporated. Magnetic circuit for miniature relays. 4,322,701, Cl. 335-202.000.
Draper, Weston E., Jr.: *See*—
Van de Walker, Roger; and Draper, Weston E., Jr., 4,321,998, Cl. 206-229.000.
Dressell, Richard G., Jr.; and Heideman, Robert J ., to Enertrols, Inc. Shock absorber. 4,321,987, Cl. 188-285.000.
Drewery, John O.; and Weston, Martin, to British Broadcasting Corporation. Processing of N.T.S.C. color television signals. 4,322,739, Cl. 358-13.000.
Drewery, John O.: *See*—
Lord, Arthur V.; Hacking, Kenneth; and Drewery, John O., 4,322,750, Cl. 358-140.000.
DSO "Bulgarplod": *See*—
Dimov, Peter S.; Pavlov, Georgi N.; Stoyanov, Atanas N.; and Nankinov, Ivan D., 4,321,863, Cl. 99-470.000.
DTI Security, a Division of Datura International, Inc.: *See*—
Kozdon, Peter J., 4,322,722, Cl. 340-554.000.
Dubois, Pierre, to Societe Anonyme dite: Compagnie Generale d'Electricite. Method of manufacturing a solar cell panel. 4,322,261, Cl. 156-280.000.
Duck, Sherman W.; and Ammenti, Rino. Level monitoring methods and apparatus particularly for high-resistivity liquids. 4,322,713, Cl. 340-59.000.
Duetsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Muller, Karl-Hans; and Barthel, Walter, 4,322,250, Cl. 106-281.00R.
Duggan, Daniel C. Backflow preventer valve. 4,321,942, Cl. 137-218.000.
Dugniolle, Jacques: *See*—
Stjepanovic, Milorad; Moreau, Michele, nee Huguet; and Dugniolle, Jacques, 4,322,410, Cl. 424-180.000.
Duke University, Inc.: *See*—
Jobsis, Frans F.; Keizer, Johannes H.; and Overaker, Ronald F., 4,321,930, Cl. 128-633.000.
Dukess, Joseph. Highway pressure-responsive means for generating electricity by vehicles. 4,322,673, Cl. 322-35.000.
Dulux Australia Limited: *See*—
Graetz, Clive W.; and Thompson, Morice W., 4,322,328, Cl. 524-458.000.
Dunker, Gerhard: *See*—
Hildebrand, Helmut; and Dunker, Gerhard, 4,322,699, Cl. 333-237.000.
Du Pont de Nemours, E. I., and Company: *See*—
Aldrich, Paul E.; and Berezin, Gilbert H., 4,322,417, Cl. 424-246.000.
Bither, Tom A., Jr.; and McClellan, William R., 4,322,358, Cl. 260-346.110.
Haglid, Frank R., 4,322,366, Cl. 260-453.300.
Hermann, Edward C.; Lee, Kyu T.; and Myers, Melvyn J., 4,322,426, Cl. 424-260.000.
Durr, Dieter: *See*—
Maier, Ludwig; and Durr, Dieter, 4,322,375, Cl. 260-951.000.
Durr, Helmut: *See*—
Esser, Klaus; Durr, Helmut; and Plath, Dieter, 4,322,325, Cl. 523-457.000.
Dutra, Gerard A.; and Sikorski, James A., to Monsanto Company. N-Nitroso-N-phosphonomethylglycinonitrile esters and the herbicidal use thereof. 4,322,238, Cl. 71-86.000.
Dutra, Gerard A.; and Sikorski, James A., to Monsanto Company. N-Nitroso-N-phosphonomethylglycine esters and the herbicidal use thereof. 4,322,239, Cl. 71-86.000.
Dwarakanath, Mirmira R.; and Marsh, Douglas G., to Bell Telephone Laboratories, Incorporated. Operational amplifier with improved offset correction. 4,322,687, Cl. 330-9.000.
Dyer, Ronald S. Slurry diverter. 4,321,975, Cl. 175-206.000.
Dynamic Systems, Inc.: *See*—
Davis, Charles M., Jr.; and Giallorenzi, Thomas G., 4,322,829, Cl. 367-178.000.
Dynamit Nobel Aktiengesellschaft: *See*—
Herrmann, Hans-Joachim; Meyer, Gunther; and Steffen, Klaus-Dieter, 4,322,554, Cl. 564-273.000.
Dyneer Corporation: *See*—
Kraft, Derald H.; and Wagner, William S., 4,321,819, Cl. 72-456.000.
E M I Limited: *See*—
Hounsfield, Godfrey N., 4,322,684, Cl. 324-309.000.
E. R. Squibb & Sons, Inc.: *See*—
Rovnyak, George C., 4,322,541, Cl. 548-379.000.
Eastern Company, The: *See*—
Pelcin, Albert L., 4,321,812, Cl. 70-472.000.
Eastman Kodak Company: *See*—
Esders, Theodore W., 4,322,496, Cl. 435-25.000.
Lee, Teh-Hsuang; and Khosla, Rajinder P., 4,322,638, Cl. 307-311.000.
Merrill, Stewart H.; Stahly, Frederick A.; Turnblom, Ernest W.; Wright, Beth G.; and Wright, Hal E., 4,322,487, Cl. 430-37.000.
Molaire, Michel F., 4,322,490, Cl. 430-281.000.
Eastman Technology, Inc.: *See*—
Bixby, James A., 4,322,752, Cl. 358-213.000.

Eaton Corporation: *See*—
Carroll, Robert J., 4,321,791, Cl. 60-39.14R.
Goetz, George W., 4,322,385, Cl. 422-165.000.

Eberly, Charles E.: *See*—
Job, Frederick D.; and Eberly, Charles E., 4,322,776, Cl. 361-386.000.

Ebi, Yutaka; Ohori, Tamio; Matsumoto, Fuyuhiko; and Tomita, Satoru, to Ricoh Company, Ltd. Variable speed electrostatographic apparatus. 4,322,734, Cl. 346-153.100.

Ecker, Karl-Heinz; and Wahl, Karl-Heinz, to Wirth Maschinen-und Bohrgerate-Fabrik GmbH. Apparatus for interchangeable mounting of rollers, particularly in a straightening machine. 4,321,815, Cl. 72-160.000.

Eckstrom, Peter M.: *See*—
Schmidt, H. Dean; and Eckstrom, Peter M., 4,321,877, Cl. 110-186.000.

Edelman, Alan. Method and apparatus for detecting and indicating data. 4,322,611, Cl. 235-383.000.

Edelson, Richard L., to Leukocyte Research, Inc. Method and system for externally treating human blood. 4,321,919, Cl. 128-214.00R.

Effler, Timothy A.: *See*—
James, David F.; Oliphant, Peter A.; and Effler, Timothy A., 4,322,074, Cl. 273-1.00E.

Eibel, Ludwig: *See*—
Hafner, Walter; Markl, Erich; Eibel, Ludwig; Kreis, Gerhard; Samrowski, Dietrich; Wick, Manfred; Deubzer, Bernward; and Friedrich, Wilhelm, 4,322,473, Cl. 428-391.000.

Eigenmann, Ludwig. Method and devices for forming highly retro-reflecting roadway surface marking. 4,322,177, Cl. 404-83.000.

Einhorn, Ruediger, to Coats & Clark, Inc. Wall anchor with self-drilling capability. 4,322,194, Cl. 411-30.000.

Eino, Tomomi: *See*—
Kondo, Toshio; Kobayashi, Akio; Eino, Tomomi; and Fukue, Naofumi, 4,321,903, Cl. 123-440.000.

Eisenwerk-Gesellschaft Maximilianshutte mbH: *See*—
Brotzmann, Karl; and Fassbinder, Hans G., 4,322,244, Cl. 75-51.000.

Electric Power Research Institute, Inc.: *See*—
Huber, Calvin O.; Schick, Karl G.; and Coburn, Joel T., 4,322,215, Cl. 23-230.00R.

Electricite de France (Service National): *See*—
Chabat-Courrede, Jean, 4,321,945, Cl. 137-514.700.

Electro-Craft Corporation: *See*—
Persson, Erland K., 4,322,646, Cl. 310-64.000.

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Carnes, Donald W., 4,321,744, Cl. 29-523.000.

El Hamamsy, Mahmoud A.; King, William C.; and Knight, Stephen, to Bell Telephone Laboratories, Incorporated. Bidirectional solid-state protector circuitry using gated diode switches. 4,322,767, Cl. 361-56.000.

Eli Lilly and Company: *See*—
Abbott, Bernard J.; and Fukuda, David S., 4,322,338, Cl. 260-112.50R.
Bach, Nicholas J.; and Kornfeld, Edmumd C., 4,322,430, Cl. 424-273.00P.
Bach, Nicholas J.; and Kornfeld, Edmund C., 4,322,540, Cl. 548-369.000.
Burow, Kenneth W., Jr., 4,322,429, Cl. 424-272.000.
Debono, Manuel, 4,322,343, Cl. 260-112.50R.
Debono, Manuel; Merkel, Kurt E.; Weeks, Robert E.; and Cole, Herald J., 4,322,406, Cl. 424-118.000.
Gesellchen, Paul D.; and Shuman, Robert T., 4,322,339, Cl. 260-112.50E.
Hershberger, Charles L., 4,322,497, Cl. 435-172.000.
Matsumoto, Ken; and Ho, Peter P. K., 4,322,428, Cl. 424-270.000.
Miller, Jean C.; and Gerzon, Koert, 4,322,351, Cl. 424-262.000.
Shuman, Robert T.; and Gesellchen, Paul D., 4,322,340, Cl. 260-112.50E.
Smithwick, Edward L., Jr.; Frederickson, Robert C. A.; and Shuman, Robert T., 4,322,342, Cl. 260-112.50E.

Ellebracht, Stephen R.; and Fairless, Charles M., to Dow Chemical Company, The. VUV Plasma atomic emission spectroscopic instrument and method. 4,322,165, Cl. 356-316.000.

Elliott, Douglas R., to Diamond Shamrock Corporation. Method and apparatus for vapor treatment of metals. 4,322,251, Cl. 134-11.000.

Ellison, Burlan E.: *See*—
Hooper, Christopher C.; Ellison, Burlan E.; and Spranca, Harry P., 4,321,780, Cl. 52-506.000.

Elmqvist, Hakan, to Siemens Aktiengesellschaft. Heart pacemaker. 4,321,928, Cl. 128-419.0PG.

Eloy, Jean-Francois; and Unsold, Eberhard, to Commissariat a l'Energie Atomique; and Gesellschaft fur Strahlen und Umweltforschung mbH. Mass spectrograph. 4,322,629, Cl. 250-299.000.

Emerson Electric Co.: *See*—
Landgraf, Robert A., 4,322,665, Cl. 318-774.000.

Emerson, Hiram J. Greenhouse construction. 4,321,775, Cl. 52-66.000.

Emerson, John A.; and Townsend, Wesley P., to Western Electric Co., Inc. Method of forming a colloidal wetting sensitizer. 4,322,451, Cl. 427-53.100.

Emhart Industries, Inc.: *See*—
Spofford, Walter R., 4,322,631, Cl. 307-39.000.

Endress u. Hauser GmbH u. Co.: *See*—
Sartorius, Wilfried, 4,322,832, Cl. 368-47.000.

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Vadas, Zoltan; Belcsak, Zoltan; Luptak, Erno; Palfalvi, Gyorgy; Vasvari, Vilmos; and Wenzel, Bela, 4,321,790, Cl. 60-39.020.

Energy Design Corp.: *See*—
Ford, R. Gary, 4,321,745, Cl. 29-526.00R.

Enertrols, Inc.: *See*—
Dressell, Richard G., Jr.; and Heideman, Robert J ., 4,321,987, Cl. 188-285.000.

Engehardt, Ervin C. Educationally correlative amusement device. 4,321,768, Cl. 46-227.000.

Engel, Michael R.; and Stiller, Jill P., to Minnesota Mining and Manufacturing Company. Use of fluorinated beta-diketones as bacteriocides and fungicides. 4,322,441, Cl. 424-331.000.

Environmental Research Institute of Michigan: *See*—
Sternberg, Stanley R., 4,322,716, Cl. 340-146.3MA.

Erben, Ludwig, to Trutzschler GmbH & Co. KG. Tuft feed control. 4,321,732, Cl. 19-240.000.

Erickson, John W., to Kobe, Inc. High specific speed rotary chamber pump. 4,322,199, Cl. 415-89.000.

Ernst, Heinz; and Wesner, Gerhard, to VDO Adolf Schindling AG. Housing assembly for instruments. 4,322,835, Cl. 368-317.000.

Ernst, Larry M.: *See*—
Dodge, John H.; and Ernst, Larry M., 4,322,847, Cl. 371-20.000.

Ernst Mueller GmbH & Co.: *See*—
Luderer, Manfred, 4,322,038, Cl. 239-700.000.

Esders, Theodore W., to Eastman Kodak Company. Inhibition of lactate oxidase. 4,322,496, Cl. 435-25.000.

Esser, Franz: *See*—
Losel, Walter; Esser, Franz; Roos, Otto; Reichl, Richard; Kuhn, Franz J.; and Traunecker, Werner, 4,322,418, Cl. 424-248.570.

Esser, Klaus; Durr, Helmut; and Plath, Dieter, to Hoechst Aktiengesellschaft. Water-dilutable binder mixture, and its use for the production of a two-layer metallic paint coating. 4,322,325, Cl. 523-457.000.

Essilor International Cie Generale d'Optique: *See*—
Minart, Francois, 4,322,138, Cl. 351-155.000.

Etablissements Carpano & Pons: *See*—
Pommat, Alain; and Fillion, Pierre, 4,322,589, Cl. 200-30.00R.

Etheridge, Colin J., to Rolls-Royce Limited. Gas turbine engine fuel burners. 4,321,794, Cl. 60-743.000.

Ethyl Corporation: *See*—
Nelson, Gunner E.; and Dagani, Michael J., 4,322,539, Cl. 548-342.000.

Euroceltique, S.A.: *See*—
Leslie, Stewart T.; Rhodes, Alan; Boroda, Cyril; and Halpern, Alfred, 4,322,433, Cl. 424-298.000.

Evans, David L.: *See*—
Neroda, Thomas H.; Flaherty, George A.; and Evans, David L., 4,322,647, Cl. 310-71.000.

Evans, Edward N., to Park Mobile, Inc. Storage conveyor operation system and surveillance system. 4,322,804, Cl. 364-478.000.

Everett/Charles Inc.: *See*—
Schadwill, Karl H., 4,322,682, Cl. 324-158.00F.

Everhart, Billy M.; and McCullough, Harold E., to Bell Telephone Laboratories, Incorporated. Electrical relay apparatus. 4,322,700, Cl. 335-128.000.

Exxon Production Research Company: *See*—
Johnson, Dale V.; and Childers, Thomas W., 4,321,751, Cl. 33-126.500.

Exxon Research & Engineering Co.: *See*—
Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S., deceased; and Klein, Robert R., 4,322,329, Cl. 524-389.000.
Maa, Peter S.; and Veluswamy, Lavanga R., 4,322,283, Cl. 208-8.00R.
Rao, Bhaskara M. L.; and Weiss, Robert A., 4,322,317, Cl. 252-520.000.

Fabien, Raymond: *See*—
Rioult, Jean-Pierre; and Fabien, Raymond, 4,322,264, Cl. 156-655.000.

Faggian, Lucio; and Platone, Edoardo, to Anio S.p.A. Method for the preparation of carbonyl compounds. 4,322,561, Cl. 568-391.000.

Faierstain, Paul. Sound-activated rotary device. 4,322,718, Cl. 367-197.000.

Fairchild Camera & Instrument Corp.: *See*—
Lee, Yong K.; and Domitrowich, Joseph R., 4,322,675, Cl. 323-277.000.

Fairless, Charles M.: *See*—
Ellebracht, Stephen R.; and Fairless, Charles M., 4,322,165, Cl. 356-316.000.

Fan, Liang-Tseng; and Wen, Chin-Yung, to Kansas State Univ. Research Foundation. Method for wastewater treatment in fluidized bed biological reactors. 4,322,296, Cl. 210-610.000.

Farine, Jean-Claude: *See*—
Schulthess, Adrian; and Farine, Jean-Claude, 4,322,405, Cl. 424-93.000.

Farmitalia Carlo Erba S.p.A.: *See*—
Cassinelli, Giuseppe; Forenza, Salvatore; Ripamonti, Maria C.; and Ruggieri, Daniela, 4,322,412, Cl. 424-180.000.

Farnworth, Wilfred: *See*—
Bleymaier, Joseph S.; Farnworth, Wilfred; and Peters, Thomas E., 4,322,380, Cl. 264-24.000.

Farooq, Saleem: *See*—
Roloff, Achim; and Farooq, Saleem, 4,322,432, Cl. 424-275.000.

Farr Company: *See*—
Hilzendeger, Joseph J.; and Masuda, Kunio, 4,322,231, Cl. 55-357.000.

Fassbinder, Hans G.: *See*—
Brotzmann, Karl; and Fassbinder, Hans G., 4,322,244, Cl. 75-51.000.

Favorite Manufacturing, Inc.: *See—*
Martin, Harlan W.; Burkholder, Harvey Z.; Voran, Willis R.; and Winters, Galen A., 4,321,887, Cl. 119-22.000.

Feibelman, Jeffrey A., to A & H Mfg. Co. Display stand. 4,322,007, Cl. 211-163.000.

Feldman, Robert I. Power coupling for a chain saw. 4,321,838, Cl. 74-417.000.

Felix, Gerald J., to Steelcase Inc. Press safety device. 4,321,841, Cl. 74-615.000.

Fellinger, Frank; Willett, Michael C.; and Jotwani, Haresh C., to International Telephone and Telegraph Corporation. Transmitter-receiver synchronizer. 4,322,844, Cl. 370-84.000.

Felten & Guilleaume Fernemeldeanlagen GmbH: *See—*
Grohmann, Erich; and Braak, Dirk J., 4,322,857, Cl. 455-226.000.

Fennel, John W., Jr.; and Oblonsky, Jan G., to International Business Machines Corporation. Demand assignment technique for TDMA satellite communication network. 4,322,845, Cl. 370-104.000.

Fenwick, Harry T. Multi-liquid flow proportioning device. 4,321,939, Cl. 137-101.270.

Ferrand, Bernard: *See—*
Challeton, Didier; Daval, Jacques; Ferrand, Bernard; and Moriceau, Hubert, 4,322,454, Cl. 427-128.000.

Ferranti Limited: *See—*
Carson, Richard G.; McCall, Frank B.; and Stanley, Alistair J., 4,322,710, Cl. 338-61.000.
Walker, Donald F., 4,322,672, Cl. 318-800.000.

Ferrin, Frank J.: *See—*
Padgitt, Howard R.; and Ferrin, Frank J., 4,322,124, Cl. 350-1.400.

Ferrini, Pier G.: *See—*
Habicht, Ernst; Ferrini, Pier G.; and Sallmann, Alfred, 4,322,431, Cl. 424-273.00B.

Ferro Corporation: *See—*
Provance, Jason D.; and Allison, Kevin W., 4,322,316, Cl. 252-512.000.

Fesco, John E., to Studley Paper Company, Inc. Method of making a reinforced vacuum cleaner filter bag. 4,322,259, Cl. 156-203.000.

Feucht, Rudi; Schmidt, Manfred; and Biermann, Peter, to Vereinigte Baubeschlagfabriken Gretsch & Co., Ltd. Cross country ski binding. 4,322,092, Cl. 280-615.000.

Fiberglas Canada Inc.: *See—*
Schuller, Marius C.; and Harris, Leslie J., 4,322,041, Cl. 242-42.000.

Field, Norman John: *See—*
Tomlinson, Roderick P. J., 4,322,466, Cl. 428-199.000.

Fillion, Pierre: *See—*
Pommat, Alain; and Fillion, Pierre, 4,322,589, Cl. 200-30.00R.

Finetex, Inc.: *See—*
Scala, Thomas L., Jr., 4,322,545, Cl. 560-103.000.

Fingermatrix Inc.: *See—*
Schiller, Michael, 4,322,163, Cl. 356-71.000.

Firestone Tire & Rubber Company, The: *See—*
Higbee, Wallace C.; and Pilarski, Regis V., 4,322,096, Cl. 280-804.000.

Fischbeck, Kenneth H.; and Wright, Allen T., to Xerox Corporation. Suspension for an oscillating bar. 4,322,063, Cl. 267-160.000.

Fish, Daniel C. E., to Leigh Flexible Structures Limited. Flood barrier. 4,321,774, Cl. 52-63.000.

Fish, Irving; Schwartz, Stephen A.; and Samuels, Stanley, to New York University. Anticonvulsive compositions and method of treating convulsive disorders. 4,322,440, Cl. 424-319.000.

Fisher, Richard J.: *See—*
Lange, Ronald E.; and Fisher, Richard J., 4,322,795, Cl. 364-200.000.

Flaherty, George A.: *See—*
Neroda, Thomas H.; Flaherty, George A.; and Evans, David L., 4,322,647, Cl. 310-71.000.

Fleck, Carl M. Arrangement for generating ions. 4,322,774, Cl. 361-231.000.

Fleit & Jacobson: *See—*
Parker, Stephen D., 4,322,617, Cl. 250-252.000.

Fleming, Paul L.; and Smith, Thane, to Communications Satellite Corporation. Planar transmission line attenuator and switch. 4,322,695, Cl. 333-104.000.

Fleming, Phillip F., to Gehl Company. Rotary chopping cylinder type forage harvester having means for sharpening its shear bar. 4,321,773, Cl. 51-249.000.

Fletcher, Deane D., II: *See—*
Hart, Edward F.; and Fletcher, Deane D., II, 4,322,632, Cl. 307-41.000.

Fliri, Anton: *See—*
Hohenlohe-Oehringen, Kraft; and Fliri, Anton, 4,322,360, Cl. 260-349.000.

Flockenhaus, Claus: *See—*
Wagener, Dietrich; Flockenhaus, Claus; and Blase, Manfred, 4,322,269, Cl. 201-39.000.

Floegel, Lothar: *See—*
Houska, Karl H.; Floegel, Lothar; Hauck, Joachim; Hosten, Daniel; Denys, Wilfried; Boone, Luc; and De Vogelaere, Marc, 4,322,280, Cl. 204-207.000.

Floyd, Middleton B., Jr., to American Cyanamid Company. 15-Deoxy-16-hydroxy-16-allenyl prostane derivatives of the E and F series. 4,322,546, Cl. 560-121.000.

FMC Corporation: *See—*
Baum, Jonathan S., 4,322,534, Cl. 546-300.000.
Baum, Jonathan S., 4,322,535, Cl. 546-300.000.

Foote, Danny R.; and Turner, Susan F., to Berkley & Company, Inc. Composite line of core and jacket. 4,321,854, Cl. 87-6.000.

Ford Motor Company: *See—*
Dell, Bryce D.; and Waineo, Glenn B., 4,321,995, Cl. 198-459.000.
Fox, David H.; and Kostan, Charles C., 4,321,895, Cl. 123-146.50A.
Kraus, Richard A., 4,322,787, Cl. 363-21.000.
Peng, Stephen C.; and Thomson, David M., 4,322,508, Cl. 525-110.000.

Ford, R. Gary, to Energy Design Corp. Sealing method. 4,321,745, Cl. 29-526.00R.

Forenade Fabriksverken: *See—*
Resjo, Per-Arne; and Loid, Hans P., 4,322,826, Cl. 367-96.000.

Forenza, Salvatore: *See—*
Cassinelli, Giuseppe; Forenza, Salvatore; Ripamonti, Maria C.; and Ruggieri, Daniela, 4,322,412, Cl. 424-180.000.

Formica Corporation: *See—*
Raghava, Ram S., 4,322,468, Cl. 428-204.000.

Forrester, Howard M.: *See—*
Abadie, Erwin I.; Dick, John O.; and Forrester, Howard M., 4,321,871, Cl. 102-214.000.

Forsberg, John W., to Lubrizol Corporation, The. Magnesium-containing complexes, method for their preparation, and compositions containing the same. 4,322,478, Cl. 428-471.000.

Forsberg, John W., to Lubrizol Corporation, The. Magnesium oxide-carboxylate complexes, method for their preparation, and compositions containing the same. 4,322,479, Cl. 428-471.000.

Forster, Siegfried; Krauth, Axel; Maier, Horst R.; and Pohlmann, Hans J., to Kernforschungsanlage Julich Gesellschaft mit Berschrankter Haftung, Rosenthal Technik AG. Recuperative heat exchanger of ceramic material. 4,321,964, Cl. 165-165.000.

Forte, Link: *See—*
Burns, Jack L.; and Forte, Link, 4,322,587, Cl. 200-5.00R.

Fowell, Alan; Shaw, Trevor W.; and Crookall, John R., to National Research Development Corporation. Arc monitor for electrical discharge machining. 4,322,595, Cl. 219-69.00C.

Fowler, Joe W. Heat cycling apparatus and method. 4,321,758, Cl. 34-34.000.

Fox, David H.; and Kostan, Charles C., to Ford Motor Company. Expansion limited socket assembly. 4,321,895, Cl. 123-146.50A.

Fox, Robert E., to Deere & Company. Hydraulic rate control system for sprayers. 4,322,034, Cl. 239-155.000.

Frailing, Charles E.; Dougherty, Thomas J.; and Johnson, Richard T., to Globe-Union Inc. Automatic battery analyzer including apparatus for determining presence of single bad cell. 4,322,685, Cl. 324-429.000.

Francis, David B., to International Business Machines Corporation. Electrode impedance monitoring method apparatus for electrocardiography. 4,321,932, Cl. 128-696.000.

Franklin, Robert C.: *See—*
Gropper, Lee; and Franklin, Robert C., 4,322,029, Cl. 233-1.00R.

Franks, Robert E.: *See—*
Davis, Sheila G.; and Franks, Robert E., 4,322,812, Cl. 364-900.000.

Frederickson, Robert C. A.: *See—*
Smithwick, Edward L., Jr.; Frederickson, Robert C. A.; and Shuman, Robert T., 4,322,342, Cl. 260-112.50E.

Freeman, Michael H., to Pilkington P. E. Limited. Optical apparatus. 4,322,135, Cl. 350-410.000.

Freese, Uwe E.: *See—*
Goepp, Robert A.; and Freese, Uwe E., 4,322,463, Cl. 428-138.000.

Freitag, Dieter; and Schmidt, Manfred, to Bayer Aktiengesellschaft. Process for the preparation of aromatic dicarboxylic acid dichlorides. 4,322,373, Cl. 260-544.00K.

Freitag, Dieter: *See—*
Schmidt, Manfred; Bottenbruch, Ludwig; Freitag, Dieter; and Nouvertne, Werner, 4,322,520, Cl. 528-167.000.

Frenzel, Claus-Dieter: *See—*
Heeb, Dieter; Bechmann, Gunter; Bergemann, Uwe; Bollert, Volker; and Frenzel, Claus-Dieter, 4,322,037, Cl. 239-337.000.

Frewer, Hans; Muller, Rainer; and Schiffers, Ulrich, to Kraftwerk Union Aktiengesellschaft. Combination method and device for gasifying coal and for reducing metal ores. 4,322,243, Cl. 75-34.000.

Frias, Ronald J.; Gross, Roger A.; and Jagielski, David, to Micron Corporation. Thermal film development apparatus. 4,322,158, Cl. 355-27.000.

FRIED. KRUPP Gesellschaft mit beschrankter Haftung: *See—*
Reinke, Friedrich; and Hoever, Paul, 4,321,976, Cl. 180-8.00C.

Friedrich, Wilhelm: *See—*
Hafner, Walter; Markl, Erich; Eibel, Ludwig; Kreis, Gerhard; Samrowski, Dietrich; Wick, Manfred; Deubzer, Bernward; and Friedrich, Wilhelm, 4,322,473, Cl. 428-391.000.

Frohberger, Paul-Ernst: *See—*
Jager, Gerhard; Klauke, Erich; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,322,442, Cl. 424-341.000.

Frontczak, Stanislaw, to Dlugolecki, Jacek, a part interest. Methods of producing fodder. 4,322,443, Cl. 426-28.000.

Fry, Stephen M., to Hughes Aircraft Company. Ammonia laser with simultaneous transitions from substrates of different K-values. 4,322,693, Cl. 372-60.000.

Fry, Warren C., to Westinghouse Electric Corp. Rapid transit system transient voltage suppression apparatus. 4,322,772, Cl. 361-111.000.

Fudenberg, H. Hugh: *See—*
Wilson, Gregory B.; and Fudenberg, H. Hugh, 4,322,274, Cl. 204-180.00G.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Takizawa, Junichi, 4,322,095, Cl. 280-802.000.

Fuji Photo Film Co., Ltd.: *See*—
Minamizono, Junji; Kawashima, Yoshiro; Ishimaru, Shingo; and Inoue, Noriyuki, 4,322,494, Cl. 430-599.000.
Shibaoka, Haruo; and Hayashi, Katsumi, 4,322,493, Cl. 430-407.000.

Fuji Xerox Co., Ltd.: *See*—
Moriguchi, Haruhiko; and Ohmori, Takashi, 4,322,733, Cl. 346-76.0PH.

Fujii, Katsutoshi: *See*—
Kobayashi, Shinsaku; Kamoshita, Katsuo; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Takashi; and Kojima, Mikio, 4,322,420, Cl. 424-251.000.

Fujii, Takayoshi: *See*—
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,322,408, Cl. 424-180.000.
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,322,409, Cl. 424-180.000.

Fujii, Yohji: *See*—
Minowa, Junichiro; Fujii, Yohji; Aoyama, Tsutomu; and Doi, Kikuo, 4,322,126, Cl. 350-96.200.

Fujisawa Pharmaceutical Company, Ltd.: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,322,341, Cl. 260-112.50R.

Fujita, Tsutomu: *See*—
Takemoto, Iwao; Nagahara, Shusaku; Fujita, Tsutomu; and Sato, Kazuo, 4,322,740, Cl. 358-44.000.

Fujitani, Nobuyuki: *See*—
Ishii, Yoshiya; Fujitani, Nobuyuki; Imamura, Hiroshi; Arai, Kazuyoshi; and Aoki, Toshiaki, 4,322,174, Cl. 403-12.000.

Fujitsu Fanuc Limited: *See*—
Kawada, Shigeki; Ishida, Hiroshi; and Koiwai, Yutaka, 4,322,671, Cl. 318-798.000.
Kurakake, Mitsuo, 4,322,794, Cl. 364-200.000.

Fujitsu Limited: *See*—
Fukushima, Toshitaka; and Ueno, Kouji, 4,322,640, Cl. 307-473.000.
Kawashima, Kenichi, 4,322,626, Cl. 250-492.200.
Toyoda, Kazuhiro, 4,322,676, Cl. 323-303.000.
Toyoda, Kazuhiro, 4,322,820, Cl. 365-154.000.

Fukuda, David S.: *See*—
Abbott, Bernard J.; and Fukuda, David S., 4,322,338, Cl. 260-112.50R.

Fukue, Naofumi: *See*—
Kondo, Toshio; Kobayashi, Akio; Eino, Tomomi; and Fukue, Naofumi, 4,321,903, Cl. 123-440.000.

Fukuhara, Toru, to Nippon Kogaku K.K. Focus detecting device with shielding. 4,322,615, Cl. 250-204.000.

Fukuhara, Toru; and Utagawa, Ken, to Nippon Kogaku K.K. Focus detecting device with shielding. 4,322,616, Cl. 250-204.000.

Fukuma, Nobuo; Kato, Yoshito; and Terui, Takao, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Yaskawa Electric Mfg. Co. Ltd. Device for controlling the feed of machine tools. 4,322,669, Cl. 318-571.000.

Fukushima, Toshitaka; and Ueno, Kouji, to Fujitsu Limited. Three-state output circuit. 4,322,640, Cl. 307-473.000.

Funk, Erwin D.; and Barrett, Mark D., to Kamyr, Inc. Apparatus for continuously feeding solid particles into a pressurized container having an improved lifting mechanism. 4,322,184, Cl. 406-82.000.

Furrow, Edward D., to General Electric Company. Replaceable reinker for an inked ribbon cartridge. 4,322,172, Cl. 400-202.400.

Furukawa, Tatsuya; and Kakeno, Sadao, to Ricoh Co., Ltd. Ink jet recording method. 4,322,732, Cl. 346-75.000.

Furuta, Kenji, to Olympus Optical Co. Ltd. Tape recorder with display. 4,322,765, Cl. 360-137.000.

Fusari, Mario P., to Illinois Tool Works Inc. Electronic gear checker. 4,321,753, Cl. 33-179.50B.

G. D. Searle & Co.: *See*—
Collins, Paul W.; and Pappo, Raphael, 4,322,543, Cl. 556-436.000.

G. R. International Electronics Limited: *See*—
Piper, Phillip G.; and Rutzen, John P., 4,322,279, Cl. 204-195.00B.

Gadeix, Jean-Marie; and Wolf, Francois, to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Manual starting device for winding yarn onto a bobbin. 4,322,040, Cl. 242-18.0PW.

Gadzhiev, Tofik A.: *See*—
Aliev, Sakhib M. O.; Aliev, Vagab S.; Gadzhiev, Tofik A.; Ismailov, Ali R. O.; Gasanov, Arif I. O.; and Guseinov, Vagif B. G. O., 4,322,515, Cl. 526-213.000.

Gaeddert, Melvin V.: *See*—
Holdeman, Adin F.; Gaeddert, Melvin V.; Ratzlaff, Howard J.; Pruitt, Martin E.; and Lohrentz, Howard R., 4,321,787, Cl. 56-341.000.

Gallo, Charles C., to Warner Electric Brake & Clutch Company. Wrap spring coupling with improved spring. 4,321,992, Cl. 192-81.00C.

Gamble, James E. Body bolt adapter for heated can rolls of high thermal efficiency. 4,321,759, Cl. 34-110.000.

Gandelman, Morris D. Clasp assembly. 4,321,734, Cl. 24-230.0AT.

Ganjo, John W.: *See*—
McLennan, Lyall A.; Ganjo, John W.; and Pomarolli, Tom, 4,322,100, Cl. 292-67.000.

Gardner, Derek V., to Beecham Group Limited. Polycyclic compounds. 4,322,370, Cl. 260-501.180.

Gasanov, Arif I. O.: *See*—
Aliev, Sakhib M. O.; Aliev, Vagab S.; Gadzhiev, Tofik A.; Ismailov, Ali R. O.; Gasanov, Arif I. O.; and Guseinov, Vagif B. G. O., 4,322,515, Cl. 526-213.000.

Gasc, Henri, to Commissariat a l'Energie Atomique. Diaphragm pulser. 4,321,856, Cl. 92-48.000.

Gaudel, Gerard G., to Pont-A-Mousson S.A. Spheroidal graphite cast iron pipe and the process for producing same. 4,321,950, Cl. 138-109.000.

Gaule, Gerhart K.: *See*—
Yarwood, John C.; Ungarean, Gary L.; Tyler, Derek E.; and Gaule, Gerhart K., 4,321,959, Cl. 164-467.000.

Gauri, Kailash K.; Pressler, Klaus; and Schenk, Klaus-Dirk. Process for the production of new mutants of herpes simplex virus type 1 and type 2. 4,322,404, Cl. 424-89.000.

Gehl Company: *See*—
Fleming, Phillip F., 4,321,773, Cl. 51-249.000.

Gehlert, Kurt, to H. D. Eichelberg & Co. GmbH. Control for sanitary mixing valve. 4,322,031, Cl. 236-12.00R.

General Electric Company: *See*—
Bochan, John, 4,321,809, Cl. 68-207.000.
Caprino, Joseph C., 4,322,320, Cl. 523-212.000.
Daniels, Herbert E.; and Randall, Harvey G., 4,322,625, Cl. 250-409.000.
Furrow, Edward D., 4,322,172, Cl. 400-202.400.
Haaf, William R., 4,322,507, Cl. 525-92.000.
Hooke, John W., 4,322,597, Cl. 219-91.100.
Hughes, Raymond B., 4,322,332, Cl. 525-424.000.
Kochanowski, John E.; and Wambach, Allen D., 4,322,333, Cl. 523-521.000.
Minarczyk, Michael M., 4,322,658, Cl. 315-47.000.
Molari, Richard E., Jr., 4,322,476, Cl. 428-412.000.
Olson, Daniel R.; and Ching, Ta Y., 4,322,455, Cl. 427-160.000.
Roth, Alfred H., 4,322,224, Cl. 55-20.000.
Shanks, Bruce E.; and Campbell, Dan R., 4,322,784, Cl. 362-306.000.
Strong, Herbert M., 4,322,396, Cl. 423-446.000.
Sugalski, Raymond K., 4,322,484, Cl. 429-94.000.
Wolfinger, John F., 4,322,790, Cl. 363-148.000.

General Electric Company Limited, The: *See*—
Walker, John D., 4,322,785, Cl. 363-21.000.

General Filter Company: *See*—
Scholten, John J.; and Young, James C., 4,322,299, Cl. 210-794.000.

General Instrument Corporation: *See*—
Lange, Le Roy J., 4,322,612, Cl. 235-419.000.

General Motors Corporation: *See*—
Martin, William A.; and Harper, Harold H., 4,321,739, Cl. 29-157.30A.
Stoltman, Donald D., 4,321,902, Cl. 123-435.000.

General Supply (Constructions) Co. Ltd.: *See*—
Pelekis, Emmanouil A., 4,321,897, Cl. 123-238.000.

General Watch Co. Ltd.: *See*—
Schaeren, Walter; and Ray, Claude, 4,322,834, Cl. 368-296.000.

George, James: *See*—
Capots, Larry H.; George, James; and Morelli, Luigi, 4,322,678, Cl. 324-61.00R.

Georgia-Pacific Corporation: *See*—
Blackmore, Kenneth A. E., 4,322,301, Cl. 252-8.50A.
Holmquist, Howard W., 4,322,300, Cl. 252-8.50C.

Georgia Tech Research Institute: *See*—
Pierotti, Robert A.; and Rybolt, Thomas R., 4,321,799, Cl. 62-112.000.
Tumblin, John E., 4,321,853, Cl. 84-454.000.

Gerrits, Hendrik J.: *See*—
Cornelissen, Gerardus A. A. F.; Gerrits, Hendrik J.; and Kamerbeek, Evert M. H., 4,322,624, Cl. 250-406.000.

Gerzon, Koert: *See*—
Miller, Jean C.; and Gerzon, Koert, 4,322,351, Cl. 424-262.000.

Gesellchen, Paul D.; and Shuman, Robert T., to Eli Lilly and Company. Pharmacologically active peptides. 4,322,339, Cl. 260-112.50E.

Gesellchen, Paul D.: *See*—
Shuman, Robert T.; and Gesellchen, Paul D., 4,322,340, Cl. 260-112.50E.

Gesellschaft fur Strahlen und Umweltforschung mbH: *See*—
Eloy, Jean-Francois; and Unsold, Eberhard, 4,322,629, Cl. 250-299.000.

Giacobbe, Thomas J.; and White, Halbert C., to Dow Chemical Co., The. Method of preparing substituted phthalides. 4,322,356, Cl. 260-343.30R.

Giallorenzi, Thomas G.: *See*—
Davis, Charles M., Jr.; and Giallorenzi, Thomas G., 4,322,829, Cl. 367-178.000.

Giddings, Brandford E.: *See*—
Miloscia, William J.; Turnbaugh, John A.; and Giddings, Brandford E., 4,322,510, Cl. 525-310.000.

Gifford, Russell L., to Addison Products Company. Dehumidifier structure. 4,321,800, Cl. 62-150.000.

Gillette Company, The: *See*—
Diederich, Walter J., 4,321,934, Cl. 132-37.00R.
Neamtu, Nicolae, 4,321,846, Cl. 82-36.00R.

Gillig, H. E. Peristalsis stimulating device. 4,321,920, Cl. 128-239.000.

Gillum, Richard R. Two handed holding apparatus for firearms. 4,321,765, Cl. 42-72.000.

Gilly, Robert L.: *See*—
Johnson, David A.; Gilly, Robert L.; and Wagener, Kenneth B., 4,322,522, Cl. 528-289.000.

Ginn, Warren G., to Systems, Science and Software. Multichannel remote transducer monitoring system. 4,322,728, Cl. 340-870.380.

Gitelson, Derek: *See—*
Williamson, Richard A.; and Gitelson, Derek, 4,322,801, Cl. 364-436.000.

Givaudan Corporation: *See—*
Lamparsky, Dietmar, 4,322,318, Cl. 252-522.00R.

Gjerstad, Victor: *See—*
Andersson, Kurt-Inge; Gjerstad, Victor; Gohl, Karl G.; Hallberg, Lars; Norstedt, Bertil; and Schaal, Helmut, 4,322,793, Cl. 364-200.000.

Glaser, David: *See—*
De Jule, Michael; Sobel, Alan; Meyer, Ralph L.; and Glaser, David, 4,322,659, Cl. 315-169.100.

Gleason, Robert J.; Richman, Mark; and Cooke, Paul E., to Research-Cottrell, Inc. SO_2 Scrubbing system for flue gas desulfurization. 4,322,392, Cl. 423-242.000.

Gleason, Robert J.; and Sui, Chin T., to Research-Cottrell, Inc. Process for drying calcium chloride generated in high chloride flue gas desulfurization systems. 4,322,393, Cl. 423-242.000.

Glen Head Inc.: *See—*
Hull, Donald R., 4,321,808, Cl. 68-43.000.

Glenn, William H.: *See—*
Tomlinson, Richard G.; and Glenn, William H., 4,321,831, Cl. 73-705.000.

Globe-Union Inc.: *See—*
Frailing, Charles E.; Dougherty, Thomas J.; and Johnson, Richard T., 4,322,685, Cl. 324-429.000.

Goda, Tadahiro: *See—*
Maeda, Kouji; and Goda, Tadahiro, 4,322,768, Cl. 361-64.000.

Goepp, Robert A.; and Freese, Uwe E., to University Patents, Inc. Custom valved cervical cap. 4,322,463, Cl. 428-138.000.

Goetz, George W., to Eaton Corporation. Filters for vehicle occupant restraint system fluid supplies. 4,322,385, Cl. 422-165.000.

Gohl, Karl G.: *See—*
Andersson, Kurt-Inge; Gjerstad, Victor; Gohl, Karl G.; Hallberg, Lars; Norstedt, Bertil; and Schaal, Helmut, 4,322,793, Cl. 364-200.000.

Gold, Elijah H.: *See—*
Neustadt, Bernard R.; and Gold, Elijah H., 4,322,434, Cl. 424-304.000.

Goldschmidt nee Horvath, Katalin: *See—*
Korosi, Jeno; Lang, Tibor; Szekely, Jozsef; Andrasi, Ferenc; Zolyomi, Gabor; Borsi, Jozsef; Goldschmidt nee Horvath, Katalin; Hamori, Tamas; Szabo nee Czibula, Gabriella; Meszaros nee Dunai-Kovacs, Zsuzsanna; and Miglecz, Erzsebet, 4,322,346, Cl. 260-239.0BD.

Gollhardt, James B.: *See—*
Ray, Glen; and Gollhardt, James B., 4,322,648, Cl. 310-156.000.

Goncharov, Evgeny S. Roller for cleaning meshes of rotary screens. 4,322,289, Cl. 209-384.000.

Goodman, Howard M.: *See—*
Baxter, John D.; Roberts, James L.; Seeburg, Peter H.; Goodman, Howard M.; and Shine, John, 4,322,499, Cl. 435-317.000.

Goodyear Aerospace Corporation: *See—*
Lucas, George A., 4,322,462, Cl. 428-61.000.

Goodyear Tire & Rubber Company, The: *See—*
Shah, Niranjan V., 4,322,551, Cl. 564-137.000.

Gossens, Peter: *See—*
Schwab, Max; Heinen, Peter; Diederichs, Willi; Gossens, Peter; Ohloff, Fritz-Gunter; and Minkenberg, Hubert, 4,321,843, Cl. 76-107.00A.

Gould Inc.: *See—*
Kozacka, Frederick J., 4,322,704, Cl. 337-159.000.
Mezera, John R.; Dimitrios, James T.; and Phillips, Graham R., 4,322,630, Cl. 290-40.00C.

"Graanderivaten Raffinaderijen Amylum", in het kort: "G.R. Amylum", Vroeger Glucoseries Reunies Genoemd: *See—*
Lambrechts, Peter F. T.; and Van Der Meeren, Jozef H. R., 4,322,322, Cl. 524-734.000.

Grady, John K. Mobile X-ray apparatus. 4,322,623, Cl. 250-402.000.

Graeme-Barber, Christopher: *See—*
Painter, Donald S.; and Graeme-Barber, Christopher, 4,321,721, Cl. 12-146.00C.

Graetz, Clive W.; and Thompson, Morice W., to Imperial Chemical Industries Limited; and Dulux Australia Limited. Manufacture of aqueous polymer dispersions and coating compositions derived from them. 4,322,328, Cl. 524-458.000.

Granatek, Alphonse P.: *See—*
Kaplan, Murray A.; and Granatek, Alphonse P., 4,322,362, Cl. 260-429.00R.
Kaplan, Murray A.; and Granatek, Alphonse P., 4,322,391, Cl. 423-209.000.

Granatek, Edmund S.: *See—*
Bouzard, Daniel; Perol, Claude; Stemer, Jacques; Weber, Abraham; and Granatek, Edmund S., 4,322,424, Cl. 424-257.000.

Grasselli, Robert K.: *See—*
Guttmann, Andrew T.; and Grasselli, Robert K., 4,322,368, Cl. 260-465.300.

Gray, Lorin S., III; Mattor, John A.; Millard, Ben; and Ward, Franklin J., to Scott Paper Company. Surface replication on a coated substrate. 4,322,450, Cl. 427-44.000.

Gray, Michael L.: *See—*
Bellinger, Robert M.; and Gray, Michael L., 4,322,225, Cl. 55-27.000.

Greene, Irwin D.: *See—*
Hillard, Ray L.; and Greene, Irwin D., 4,322,359, Cl. 260-347.800.

Greuter, Hans: *See—*
Martin, Pierre; Greuter, Hans; Steiner, Eginhard; and Bellus, Daniel, 4,322,374, Cl. 260-544.00Y.

Griffin, Freddie, Jr.: *See—*
Wilson, David A.; and Griffin, Freddie, Jr., 4,322,361, Cl. 260-429.00J.

Grigsby, Roy E. Auxiliary counter balance for well pump. 4,321,837, Cl. 74-41.000.

Grimes, Steven D.; and Mihalcik, Thomas J., to Conoco Inc. Radiant heat collector-sensor temperature control system. 4,321,828, Cl. 73-351.000.

Grinage, Claude M., to White Consolidated Industries, Inc. Tool changer for vertical boring machine. 4,321,746, Cl. 29-568.000.

Grist, Franklin J., to Miller Electric Manufacturing Company. Square wave power supply for arc welding. 4,322,602, Cl. 219-130.330.

Grohmann, Erich; and Braak, Dirk J., to Felten & Guilleaume Fernemeldeanlagen GmbH. Method and circuit arrangement for monitoring a radio receiver. 4,322,857, Cl. 455-226.000.

Grollimund, Everett C., to Philip Morris, Incorporated. Web transport apparatus. 4,322,043, Cl. 242-67.30R.

Gropper, Lee; and Franklin, Robert C., to Beckman Instruments, Inc. Air driven centrifuge having a tachometer. 4,322,029, Cl. 233-1.00R.

Gross, Roger A.: *See—*
Frias, Ronald J.; Gross, Roger A.; and Jagielski, David, 4,322,158, Cl. 355-27.000.

Grosse, Gerard: *See—*
Sauret, Jacques; and Grosse, Gerard, 4,321,777, Cl. 52-308.000.

Grothoff, Gisela. Method of discharging and applying flowable media. 4,321,953, Cl. 141-2.000.

Gruber, Peter: *See—*
Voss, Gunther; and Gruber, Peter, 4,322,449, Cl. 427-3.000.

Grudzinski, Richard, to Payot, Jocelyne. Low voltage operated electric circuits. 4,322,724, Cl. 340-595.000.

Gruett, Monte D.: *See—*
Lesher, George Y.; Page, Donald F.; and Gruett, Monte D., 4,322,533, Cl. 546-273.000.

Grumman Aerospace Corporation: *See—*
Aleck, Benjamin J., 4,322,062, Cl. 267-154.000.

Grund, Christian: *See—*
Lemelson, Jerome H.; and Grund, Christian, 4,321,929, Cl. 128-630.000.

Grunewalder, John F.: *See—*
Castellucci, Nicholas T.; Ostrowski, John S.; and Grunewalder, John F., 4,322,459, Cl. 428-386.000.

GTE Automatic Electric Labs Inc.: *See—*
Khan, Ashfaq R.; Macrander, Max S.; and Krylow, Konstanty E., 4,322,580, Cl. 179-18.0EE.
Kuster, Karl H., 4,322,817, Cl. 363-26.000.
Oehrig, Kenneth H.; and Petkewicz, Frank J., 4,322,708, Cl. 338-32.00H.
Vonder, David L.; and Petkewicz, Frank J., 4,322,709, Cl. 338-32.00H.

GTE Products Corporation: *See—*
Chappell, Ian C.; and Balog, G. George, 4,322,783, Cl. 362-217.000.
Patrician, Thomas J.; Mullendore, James A.; Weaver, Theodore L.; and Charlesworth, Clayton D., 4,322,248, Cl. 75-245.000.

Gulf Oil Corporation: *See—*
Schmid, Bruce K., 4,322,389, Cl. 422-187.000.

Gulf Research & Development Company: *See—*
Tsai, Shirley C.; and McIlvried, Howard G., III, 4,322,284, Cl. 208-10.000.

Guseinov, Vagif B. G. O.: *See—*
Aliev, Sakhib M. O.; Aliev, Vagab S.; Gadzhiev, Tofik A.; Ismailov, Ali R. O.; Gasanov, Arif I. O.; and Guseinov, Vagif B. G. O., 4,322,515, Cl. 526-213.000.

Gustav F. Gerdts KG: *See—*
Schutzer, Gerhard, 4,321,944, Cl. 137-512.100.

Gutierrez, William S.: *See—*
Jacobson, Kenneth E.; Gutierrez, William S.; and Patterson, Williams G., 4,322,030, Cl. 233-23.00R.

Guttmann, Andrew T.; and Grasselli, Robert K., to Standard Oil Co., The. Copper-promoted antimony phosphate oxide complex catalysts. 4,322,368, Cl. 260-465.300.

H. D. Eichelberg & Co. GmbH: *See—*
Gehlert, Kurt, 4,322,031, Cl. 236-12.00R.

Haaf, William R., to General Electric Company. Molded article of polyphenylene ether and hydrogenated block copolymer. 4,322,507, Cl. 525-92.000.

Habicht, Ernst; Ferrini, Pier G.; and Sallmann, Alfred, to Ciba-Geigy Corporation. Pharmaceutical preparations containing benzimidazole 2-derivatives. 4,322,431, Cl. 424-273.00B.

Hacking, Kenneth: *See—*
Lord, Arthur V.; Hacking, Kenneth; and Drewery, John O., 4,322,750, Cl. 358-140.000.

Hafner, Walter; Markl, Erich; Eibel, Ludwig; Kreis, Gerhard; Samrowski, Dietrich; Wick, Manfred; Deubzer, Bernward; and Friedrich, Wilhelm, to Consortium fur Elektrochemische Industrie GmbH. Organosiloxanes with SiC-bonded groups and a process for preparing the same. 4,322,473, Cl. 428-391.000.

Haggar Company: *See—*
Off, Joseph W. A., 4,321,710, Cl. 2-247.000.

Haglid, Frank R., to Du Pont de Nemours, E. I., and Company. Waste treatment process. 4,322,366, Cl. 260-453.300.

Hagyuda, Nobuyoshi: *See*—
Motoori, Ryuzo; and Hagyuda, Nobuyoshi, 4,322,147, Cl. 354-106.000.

Hahn, Erwin; Lach, Dietrich; and Streicher, Rolf, to BASF Aktiengesellschaft. Auxiliary, and process, for the soaking of hides. 4,322,210, Cl. 8-94.180.

Hahn, Friedrich W.; and Meyer, Dieter, to Hahn GmbH & Co. Bead construction for tubeless tires. 4,321,957, Cl. 152-362.00R.

Hahn GmbH & Co.: *See*—
Hahn, Friedrich W.; and Meyer, Dieter, 4,321,957, Cl. 152-362.00R.

Hain, Gottfried; Wulff, Bernd; and Stacheter, Johann, to Alpha Alpenland Maschinenbau Hain & Co., K.G. Cheese manufacture. 4,321,861, Cl. 99-455.000.

Hajos, Zoltan G.; and Wachter, Michael P., to Ortho Pharmaceutical Corporation. Synthesis of dioxabicyclo(3.2.1)octanes and oxepanes. 4,322,353, Cl. 260-340.600.

Hake, Kenneth A.; and Palen, Nelson J., to Kent Manufacturing Co., Inc. Field cultivator tool support mounting apparatus. 4,321,971, Cl. 172-710.000.

Hall, Rolande E., to Howmedica Management & Technical Services, Limited. Process for producing a package. 4,321,781, Cl. 53-427.000.

Hallberg, Lars: *See*—
Andersson, Kurt-Inge; Gjerstad, Victor; Gohl, Karl G.; Hallberg, Lars; Norstedt, Bertil; and Schaal, Helmut, 4,322,793, Cl. 364-200.000.

Halliburton Company: *See*—
Cain, David E., 4,321,829, Cl. 73-433.000.
Dill, Walter R., 4,322,306, Cl. 252-8.55C.
Streich, Steven G.; and Nickles, R. Benton, Jr., 4,322,181, Cl. 405-224.000.

Halpern, Alfred: *See*—
Leslie, Stewart T.; Rhodes, Alan; Boroda, Cyril; and Halpern, Alfred, 4,322,433, Cl. 424-298.000.

Hamada, Hiroshi: *See*—
Uede, Hisashi; Yano, Kohzo; Hamada, Hiroshi; Nakauchi, Hiroshi; and Inami, Yasuhiko, 4,322,133, Cl. 350-357.000.

Hamano, Eizaburo: *See*—
Takenaka, Shigeo; and Hamano, Eizaburo, 4,322,655, Cl. 313-471.000.

Hammons, Carl A.; and Martin, Joseph H. Carburetor. 4,322,376, Cl. 261-44.00A.

Hamori, Tamas: *See*—
Korosi, Jeno; Lang, Tibor; Szekely, Jozsef; Andrasi, Ferenc; Zolyomi, Gabor; Borsi, Jozsef; Goldschmidt nee Horvath, Katalin; Hamori, Tamas; Szabo nee Czibula, Gabriella; Meszaros nee Dunai-Kovacs, Zsuzsanna; and Miglecz, Erzsebet, 4,322,346, Cl. 260-239.0BD.

Hamprecht, Gerhard: *See*—
Baumann, Annegrit; Kiehs, Karl; Hamprecht, Gerhard; Lange, Arno; and Adolphi, Heinrich, 4,322,413, Cl. 424-200.000.

Haneda, Hideo: *See*—
Yamanaka, Minoru; Haneda, Hideo; Katoh, Masatoshi; and Suzuki, Mitsuyuki, 4,322,057, Cl. 251-129.000.

Hans Schwarzkopf GmbH: *See*—
Heeb, Dieter; Bechmann, Gunter; Bergemann, Uwe; Bollert, Volker; and Frenzel, Claus-Dieter, 4,322,037, Cl. 239-337.000.

Hara, Hajime; Orii, Shingo; and Araki, Yoshihiko, to Nippon Oil Co., Ltd. Resin compositions comprising amine or ammonia salts of malenized butadiene polymers are used to form fibrous laminates. 4,322,470, Cl. 428-246.000.

Hara, Hideo: *See*—
Uranaka, Kyoji; Tarumizu, Yasumasa; Hara, Hideo; and Ichimura, Masaaki, 4,321,793, Cl. 60-358.000.

Hara, Kunio, to Nifco Inc. Thermal cutout fuse. 4,322,705, Cl. 337-407.000.

Harada, Morio. Permanent-wave solution. 4,322,401, Cl. 424-72.000.

Harada, Shinichi: *See*—
Takahashi, Nagashige; Harada, Shinichi; and Yamamori, Eiji, 4,322,129, Cl. 350-269.000.

Harco Corporation: *See*—
Rog, Joseph W.; Nicholas, Karl W.; and Waits, Charles G., 4,322,805, Cl. 364-481.000.

Hardin, Leonard J.; and Shepherd, Charles D., to Arvin Industries, Inc. Catalytic converter assembly. 4,322,388, Cl. 422-177.000.

Hardwick, John F., to Burroughs Corporation. Tribit decoder for use in a disc file system. 4,322,760, Cl. 360-77.000.

Harigaya, Isao: *See*—
Yamada, Tateo; Harigaya, Isao; Ogawa, Yukio; and Hirohata, Michio, 4,322,145, Cl. 354-50.000.

Harper, Harold H.: *See*—
Martin, William A.; and Harper, Harold H., 4,321,739, Cl. 29-157.30A.

Harper, John S.: *See*—
Comerford, Liam D.; Harper, John S.; and Lean, Eric G., 4,322,127, Cl. 350-96.210.

Harris, Leslie J.: *See*—
Schuller, Marius C.; and Harris, Leslie J., 4,322,041, Cl. 242-42.000.

Harrison, Keith T.; McGeehin, Peter; and Hooper, Alan, to United Kingdom Atomic Energy Authority. Preparation of materials. 4,322,485, Cl. 429-193.000.

Hart, Cornelis M.: *See*—
Lohstroh, Jan; and Hart, Cornelis M., 4,322,821, Cl. 365-155.000.

Hart, Edward F.; and Fletcher, Deane D., II, to Teccor Electronics, Inc. Remote load selector. 4,322,632, Cl. 307-41.000.

Hartung, Rodney L.; McCann, Dennis L.; Uhre, Larry W.; Bergmann, Richard P.; Hostetter, James A.; and Konrad, Nicholas J., to Carver Foundry Products. Two-tube continuous sand muller. 4,322,168, Cl. 366-15.000.

Harvey, Robin J., to Huges Aircraft Company. Cross-field plasma mode electric conduction control device. 4,322,661, Cl. 315-344.000.

Hashimoto, Masashi: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,322,341, Cl. 260-112.50R.

Hashimoto, Nobuyuki; and Satomoto, Atsushi, to Aisin Seiki Kabushiki Kaisha. Thermally responsive valve device. 4,322,032, Cl. 236-48.00R.

Hashimoto, Shigeru; and Sumi, Akiyasu, to Canon Kabushiki Kaisha. Mounting mechanism for the interchangeable lens assembly of a camera. 4,322,154, Cl. 354-286.000.

Haskew, Francis A.: *See*—
Taylor, Timothy P.; Dowell, Joseph; and Haskew, Francis A., 4,322,113, Cl. 299-1.000.

Hasselquist, Paul B.; and Baldner, Richard, to United States of America, Energy. Regenerative air heater. 4,322,205, Cl. 432-214.000.

Hatakeyama, Akira, to Sony Corporation. Servo control apparatus for adjusting the phase of a rotary head assembly to correct for errors which may occur due to changes in operating characteristics, while minimizing phase errors during edit operations. 4,322,757, Cl. 360-14.000.

Hattori, Kiyoji: *See*—
Takayama, Kenichiro; Adachi, Tetsuo; Kohata, Mamoru; Hattori, Kiyoji; and Tomiyama, Tomoko, 4,322,498, Cl. 435-255.000.

Hattori, Tadashi: *See*—
Yasuda, Eturo; Sato, Susumu; Segawa, Yoshihiro; Hattori, Tadashi; and Aoki, Keiji, 4,322,383, Cl. 422-95.000.

Hauck, Joachim: *See*—
Houska, Karl H.; Floegel, Lothar; Hauck, Joachim; Hosten, Daniel; Denys, Wilfried; Boone, Luc; and De Vogelaere, Marc, 4,322,280, Cl. 204-207.000.

Hauni-Richmond, Inc.: *See*—
Hinzmann, Alfred; and Presser, Erich, 4,321,993, Cl. 198-400.000.

Havre, Odd. Method of transferring a fluid from a station on the sea bed to a vessel, or vice-versa, and a means and a vessel for carrying out the method. 4,321,720, Cl. 441-5.000.

Haws, Spencer K. Automatic hot water recovery system. 4,321,943, Cl. 137-337.000.

Hayase, Shuzi: *See*—
Wada, Moriyasu; Suzuki, Shuichi; Ito, Takeo; and Hayase, Shuzi, 4,322,513, Cl. 525-507.000.

Hayashi, Katsumi: *See*—
Shibaoka, Haruo; and Hayashi, Katsumi, 4,322,493, Cl. 430-407.000.

Hayman, Ernest P.: *See*—
Yokoyama, Henry; Hayman, Ernest P.; Hsu, Wan-Jean; and Poling, Stephen M., 4,322,242, Cl. 71-121.000.

Hays, George E.: *See*—
Cook, Charles F.; and Hays, George E., 4,322,227, Cl. 55-68.000.

Hazen, Gretz L., to DEC International Inc. Closed cheese making vat with recirculating whey. 4,321,860, Cl. 99-453.000.

Hedblom, Soren. Device for uprooting tree stumps. 4,321,761, Cl. 37-2.00R.

Heeb, Dieter; Bechmann, Gunter; Bergemann, Uwe; Bollert, Volker; and Frenzel, Claus-Dieter, to Hans Schwarzkopf GmbH. Aerosol can, having a super-fine atomization valve, with a filling which contains a propellant, process for its manufacture, and its use. 4,322,037, Cl. 239-337.000.

Heess, Emil; Hums, Norbert; and Krug, Kurt, to Schenk-Filterbau Gesellschaft mit beschrankter Haftung. Method and apparatus for stabilizing wine or other beverages. 4,322,446, Cl. 426-330.400.

Heide, Helmut: *See*—
Reiner, Roland; KiBing, Wolfgang; Doring, Helga; Koster-Losche, Kari; and Heide, Helmut, 4,322,398, Cl. 424-19.000.

Heidelberger Druckmaschinen Aktiengesellschaft: *See*—
Jeschke, Willi; Rambausek, Hugo; and Schilling, Paul, 4,321,869, Cl. 101-136.000.

Heideman, Robert J .: *See*—
Dressell, Richard G., Jr.; and Heideman, Robert J ., 4,321,987, Cl. 188-285.000.

Heimann GmbH: *See*—
Steinhage, Peter-Wilhelm, 4,322,620, Cl. 250-333.000.

Heimbach, Kim P.; and Johnson, Ronald E., to Corning Glass Works. Decalcomania. 4,322,467, Cl. 428-200.000.

Heinemann, Otto; Lucke, Helmut; Schobler, Werner; Heiringhoff, Burkhard; and Krumme, Helmut, to Krupp Polysius AG. Hydrodynamic bearing. 4,322,116, Cl. 308-9.000.

Heinen, Peter: *See*—
Schwab, Max; Heinen, Peter; Diederichs, Willi; Gossens, Peter; Ohloff, Fritz-Gunter; and Minkenberg, Hubert, 4,321,843, Cl. 76-107.00A.

Heiringhoff, Burkhard: *See*—
Heinemann, Otto; Lucke, Helmut; Schobler, Werner; Heiringhoff, Burkhard; and Krumme, Helmut, 4,322,116, Cl. 308-9.000.

Hemmi, Keiji: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,322,341, Cl. 260-112.50R.

Hemphill, Charles W. Digging tooth apparatus for V bottom bucket. 4,321,762, Cl. 37-141.00R.

Hemsath, Klaus H., to Midland-Ross Corporation. Thermal energy exchanging device. 4,321,961, Cl. 165-8.000.

Hencken, Gunther: *See*—
Wagner, Reinhard; Werner, Gerhard; Hencken, Gunther; and Just, Christoph, 4,322,504, Cl. 525-7.100.

Henderson, Homer I. Trotliners aid. 4,321,766, Cl. 43-4.000.

Hendricks, Charles D., to University of Illinois Foundation. Method for producing uniform spherical shells. 4,322,378, Cl. 264-7.000.

Hendrickson, William W.: *See*—
Chumley, Calvin L.; Hendrickson, William W.; and Mace, Leon P., 4,322,588, Cl. 200-5.00A.

Henis, Jay M. S.: *See*—
Lee, Cheng H.; and Henis, Jay M. S., 4,322,501, Cl. 521-32.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Konrad, Gunther; and Lieske, Edgar, 4,322,212, Cl. 8-407.000.

Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See*—
Conrad, Jens; Bruns, Klaus; and Upadek, Horst, 4,322,559, Cl. 568-373.000.

Henneman, John W.: *See*—
Myers, William P.; Torzala, Terence A.; and Henneman, John W., 4,322,228, Cl. 55-163.000.

Henning, Gary S., to Snap-on Tools Corporation. Alloy steel for severe cold forming. 4,322,247, Cl. 75-128.00F.

Henning, Gary S., to Snap-on Tools Corporation. Tool made from alloy steel for severe cold forming. 4,322,256, Cl. 148-36.000.

Henry, Richard J.; Zackay, Victor F.; and Bhat, Manjeshwar S., to Teledyne Industries, Inc. High speed and other tool steels. 4,322,246, Cl. 75-124.000.

Herm, Jurgen: *See*—
Krakow, Heinz; Tomsen, Harald; and Herm, Jurgen, 4,322,596, Cl. 219-73.210.

Hermann, Edward C.; Lee, Kyu T.; and Myers, Melvyn J., to Du Pont de Nemours, E. I., and Company. 17-Substituted-6-desoxy-7,8-dihydro-6α-methylnoroxymorphone narcotic antagonists. 4,322,426, Cl. 424-260.000.

Herrmann, Hans-Joachim; Meyer, Gunther; and Steffen, Klaus-Dieter, to Dynamit Nobel Aktiengesellschaft. Polymeric azomethines. 4,322,554, Cl. 564-273.000.

Hershberger, Charles L., to Eli Lilly and Company. Process for transducing *Escherichia coli* K12 χ1776. 4,322,497, Cl. 435-172.000.

Hershock, Bruce N., to Caterpillar Tractor Co. Pusher block for rotary forging machines and method of using same. 4,321,813, Cl. 72-76.000.

Hesston Corporation: *See*—
Holdeman, Adin F.; Gaeddert, Melvin V.; Ratzlaff, Howard J.; Pruitt, Martin E.; and Lohrentz, Howard R., 4,321,787, Cl. 56-341.000.

Heuft, Bernhard. Means for laterally deflecting articles from a path of travel. 4,321,994, Cl. 198-436.000.

Hewlett-Packard Company: *See*—
Neumann, Hans D., 4,322,838, Cl. 369-45.000.
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,322,816, Cl. 364-900.000.

Hi-G Incorporated: *See*—
Drapeau, Donald F., 4,322,701, Cl. 335-202.000.

Hidaka, Ekiro: *See*—
Kobayashi, Kyoji; Tsutsui, Yujiro; Kaneko, Noboru; Hidaka, Ekiro; Konishi, Kiyoshi; and Iwaoka, Toshio, 4,321,901, Cl. 123-352.000.

Higashi, Koichi: *See*—
Katayama, Akira; and Higashi, Koichi, 4,322,153, Cl. 354-225.000.

Higbee, Wallace C.; and Pilarski, Regis V., to Firestone Tire & Rubber Company, The. Passive restraint system. 4,322,096, Cl. 280-804.000.

Higgins, Sam M. Reusable surgical implements holder. 4,321,999, Cl. 206-370.000.

Hijikata, Kenji: *See*—
Yoshimura, Naoki; Hijikata, Kenji; and Hosokawa, Noritaka, 4,322,327, Cl. 524-507.000.

Hildebrand, Helmut; and Dunker, Gerhard, to Kabel-und Metallwerke Gutehoffnungshutte. Radiating cable. 4,322,699, Cl. 333-237.000.

Hill, Francis K. Method for making asphalt-rubber pavement compositions. 4,322,167, Cl. 366-8.000.

Hillard, Ray L.; and Greene, Irwin D., to American Cyanamid Company. Process for the preparation of 2,5-dimethyl-1,4: 3,6-dianhydrosorbitol. 4,322,359, Cl. 260-347.800.

Hills Bros. Coffee, Inc.: *See*—
Hubbard, Merton R., 4,322,447, Cl. 426-467.000.

Hilti Aktiengesellschaft: *See*—
Troeder, Lutz; and Hoyss, Franz, 4,322,649, Cl. 310-194.000.

Hilzendeger, Joseph J.; and Masuda, Kunio, to Farr Company. Filter element locking mechanism. 4,322,231, Cl. 55-357.000.

Hinshaw, Carl F. Soup retort. 4,322,196, Cl. 414-149.000.

Hintsch, Otto, to Sulzer Brothers Ltd. Warp yarn stop motion. 4,321,951, Cl. 139-353.000.

Hinzmann, Alfred; and Presser, Erich, to Hauni-Richmond, Inc. Arrangement for orienting and conveying barrels of tampon inserters. 4,321,993, Cl. 198-400.000.

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Hirohata, Michio: *See*—
Yamada, Tateo; Harigaya, Isao; Ogawa, Yukio; and Hirohata, Michio, 4,322,145, Cl. 354-50.000.

Hirose, Fumio: *See*—
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,322,408, Cl. 424-180.000.
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,322,409, Cl. 424-180.000.

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Hisegawa, Takashi; Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; Kumano, Mikio; and Sumiyoshi, Masaharu, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Method of reducing fuel consumption rate in internal combustion engines. 4,322,800, Cl. 364-431.050.

Hitachi Chemical Company, Ltd.: *See*—
Arakawa, Kouji; Nomaguchi, Kanemasa; and Iwami, Etsuji, 4,322,334, Cl. 523-512.000.

Hitachi Denshi Kabushiki Kaisha: *See*—
Takemoto, Iwao; Nagahara, Shusaku; Fujita, Tsutomu; and Sato, Kazuo, 4,322,740, Cl. 358-44.000.

Hitachi, Ltd.: *See*—
Hiroshima, Minoru; and Ohta, Hirofumi, 4,322,818, Cl. 365-27.000.
Kinoshita, Mitsuo; and Omori, Takashi, 4,322,267, Cl. 376-216.000.
Nishi, Kunihiko; Wakashima, Yoshiaki; Suzuki, Akira; Kaneda, Aizo; and Tuzuku, Sumumu, 4,322,593, Cl. 219-10.810.
Oguino, Masanori, 4,322,746, Cl. 358-127.000.
Takemoto, Iwao; Nagahara, Shusaku; Fujita, Tsutomu; and Sato, Kazuo, 4,322,740, Cl. 358-44.000.
Ueta, Yasuomi; and Toyama, Tatsuro, 4,322,777, Cl. 361-397.000.
Yamashiro, Osamu, 4,322,639, Cl. 307-350.000.

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Matsuura, Takeshi; and Watatani, Seiji, 4,322,474, Cl. 428-411.000.

HITCO: *See*—
Beckley, Don A., 4,322,464, Cl. 428-175.000.

Ho, Kuo-Sheng. Water-dispensers. 4,322,291, Cl. 210-181.000.

Ho, Peter P. K.: *See*—
Matsumoto, Ken; and Ho, Peter P. K., 4,322,428, Cl. 424-270.000.

Hobart Corporation: *See*—
Athey, Stuart E.; Johnson, Thomas M.; and Shaeffer, Raymond P., 4,321,849, Cl. 83-816.000.

Hobo, Nobuhito: *See*—
Hisegawa, Takashi; Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; Kumano, Mikio; and Sumiyoshi, Masaharu, 4,322,800, Cl. 364-431.050.

Hoborn, Jan; and Krebs, Ulrich, to Molnlycke AB. Method and a device for controlling the occurrence of perforations in operation gloves. 4,321,925, Cl. 128-303.130.

Hodge, Norman J.; and Logsdon, John S., to Caterpillar Tractor Co. Latch assembly-reversible seat. 4,322,052, Cl. 248-420.000.

Hodshire, Vincent B. Ice fishing apparatus. 4,321,767, Cl. 43-15.000.

Hoechst Aktiengesellschaft: *See*—
Esser, Klaus; Durr, Helmut; and Plath, Dieter, 4,322,325, Cl. 523-457.000.
Jensen, Harald; Schmidt, Erwin; Mitzlaff, Michael; Cramer, Jurgen; Pistorius, Rudolf; Pietsch, Hartmut; and Dehmer, Klaus, 4,322,271, Cl. 204-73.00R.
Kleber, Rolf; and Jaeckel, Lothar, 4,322,302, Cl. 252-8.800.
Sander, Jurgen; and Horn, Klaus, 4,322,491, Cl. 430-286.000.
Stahler, Gerhard, 4,322,371, Cl. 260-502.40R.
Wagner, Reinhard; Werner, Gerhard; Hencken, Gunther; and Just, Christoph, 4,322,504, Cl. 525-7.100.

Hoever, Paul: *See*—
Reinke, Friedrich; and Hoever, Paul, 4,321,976, Cl. 180-8.00C.

Hoff, Dave; and Vansloun, Peter H., to Honeywell Inc. Seismic aircraft maneuver classifier. 4,322,828, Cl. 367-118.000.

Hoffman, William F., to Merck & Co., Inc. Substituted biphenyl-2-carboxaldehydes. 4,322,563, Cl. 568-425.000.

Hoffmann-La Roche Inc.: *See*—
Hohenlohe-Oehringen, Kraft; and Fliri, Anton, 4,322,360, Cl. 260-349.000.

Hofmeister, Helmut: *See*—
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Wiechert, Rudolf, 4,322,349, Cl. 260-239.55R.

Hohenlohe-Oehringen, Kraft; and Fliri, Anton, to Hoffmann-La Roche Inc. Process for producing imidazolidone intermediates of biotin. 4,322,360, Cl. 260-349.000.

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Holdeman, Adin F.; Gaeddert, Melvin V.; Ratzlaff, Howard J.; Pruitt, Martin E.; and Lohrentz, Howard R., to Hesston Corporation. Method and apparatus for making large round crop bales. 4,321,787, Cl. 56-341.000.

Holland, Mason P.; Taylor, Lester E.; and Branch, James W., to W. C. Bradley Co. Barbeque grill mounting bracket. 4,322,049, Cl. 248-154.000.

Holmquist, Howard W., to Georgia-Pacific Corporation. Drilling fluid. 4,322,300, Cl. 252-8.50C.

Hon, Edward D. Electrode structure and applicator therefor. 4,321,931, Cl. 128-642.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Miyakoshi, Shinichi; and Yamamoto, Kazuhiro, 4,322,088, Cl. 280-284.000.

Honda, Takeo: *See*—
Kobayashi, Shinsaku; Kamoshita, Katsuo; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Takashi; and Kojima, Mikio, 4,322,420, Cl. 424-251.000.

Honecker, Hans-Jurgen: *See*—
Berghaus, Klaus; Lehmann, Gerhard; Berghof, Hans-Joachim; and Honecker, Hans-Jurgen, 4,322,112, Cl. 297-362.000.
Honeywell Inc.: *See*—
Aagard, Roger L., 4,322,621, Cl. 250-343.000.
Hoff, Dave; and Vansloun, Peter H., 4,322,828, Cl. 367-118.000.
McHenry, Kelly D.; Smeby, Jane M.; and Michelson, Robert H., 4,322,395, Cl. 423-412.000.
Padgitt, Howard R.; and Ferrin, Frank J., 4,322,124, Cl. 350-1.400.
Honeywell Information Systems Inc.: *See*—
Carroll, Elmer W.; Negi, Virendra S.; and Peters, Arthur, 4,322,846, Cl. 371-16.000.
Lange, Ronald E.; and Fisher, Richard J., 4,322,795, Cl. 364-200.000.
Hongu, Masayuki; Ohmuro, Shigeru; and Tokuhara, Masaharu, to Sony Corporation. Detector circuit for a television receiver. 4,322,751, Cl. 358-195.100.
Honold, Peter; and Wagner, Gerhard, to Siemens Aktiengesellschaft. Interrogator-responsor system for secondary radar devices. 4,322,729, Cl. 343-6.50R.
Hooke, John W., to General Electric Company. Method and apparatus for interconnecting electrochemical cells for a battery. 4,322,597, Cl. 219-91.100.
Hooper, Alan: *See*—
Harrison, Keith T.; McGeehin, Peter; and Hooper, Alan, 4,322,485, Cl. 429-193.000.
Hooper, Christopher C.; Ellison, Burlan E.; and Spranca, Harry P., to Atlantic Building Systems, Inc. Snap cap for architectural wall panel. 4,321,780, Cl. 52-506.000.
Hooper, David C.; Johnson, George A.; and Peter, Donald, to Lever Brothers Company. Detergent product containing deodorant compositions. 4,322,308, Cl. 252-107.000.
Horn, Klaus: *See*—
Sander, Jurgen; and Horn, Klaus, 4,322,491, Cl. 430-286.000.
Horn, Michael, to Optsonic Research Associates, Inc. Optical bichromatic position finder. 4,321,830, Cl. 73-607.000.
Horvitz, David; and Baugh, William D., to National Distillers & Chemical Corp. Production of 1,3-difunctional compounds. 4,322,355, Cl. 260-340.700.
Hoshizaki Electric Co., Ltd.: *See*—
Sakamoto, Shigetoshi, 4,321,802, Cl. 62-330.000.
Hosokawa, Noritaka: *See*—
Yoshimura, Naoki; Hijikata, Kenji; and Hosokawa, Noritaka, 4,322,327, Cl. 524-507.000.
Hosten, Daniel: *See*—
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Hostetter, James A.: *See*—
Hartung, Rodney L.; McCann, Dennis L.; Uhre, Larry W.; Bergmann, Richard P.; Hostetter, James A.; and Konrad, Nicholas J., 4,322,168, Cl. 366-15.000.
Hotta, Nobuaki: *See*—
Sasaki, Isao; Hotta, Nobuaki; and Tsujide, Tohru, 4,322,736, Cl. 357-59.000.
Hottinger Baldwin Measurements, Inc.: *See*—
Ort, Werner, 4,322,707, Cl. 338-2.000.
Hougen, Everett D. Annular hole cutter. 4,322,187, Cl. 408-204.000.
Hougen, Everett D. Annular hole cutter. 4,322,188, Cl. 408-206.000.
Hounsfield, Godfrey N., to E M I Limited. Imaging systems. 4,322,684, Cl. 324-309.000.
House, David W., to UOP Inc. Chiral supports for resolution of racemates. 4,322,310, Cl. 252-184.000.
Houska, Karl H.; Floegel, Lothar; Hauck, Joachim; Hosten, Daniel; Denys, Wilfried; Boone, Luc; and De Vogelaere, Marc, to Siemens Aktiengesellschaft. Electrolysis device for the galvanic reinforcement of tape-shaped plastic foils which are precoated to be conductive. 4,322,280, Cl. 204-207.000.
Howard, Guy J.; Hubbard, James H.; McCrumb, Walter C.; and Spivey, Paul R., to International Business Machines Corporation. Improved Data log retrieval system. 4,322,813, Cl. 364-900.000.
Howe, Rodney R.; and Ruonavaara, Quentin F., to Boeing Company, The. Sprayable polyester coating. 4,322,460, Cl. 427-426.000.
Howmedica Management & Technical Services, Limited: *See*—
Hall, Rolande E., 4,321,781, Cl. 53-427.000.
Hoyle, Charles E.; and Lenox, Ronald S., to Armstrong World Industries, Inc. Development of color in wood with aminobenzenesulfonyl azides. 4,322,211, Cl. 8-402.000.
Hoyss, Franz: *See*—
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Hsu, Wan-Jean: *See*—
Yokoyama, Henry; Hayman, Ernest P.; Hsu, Wan-Jean; and Poling, Stephen M., 4,322,242, Cl. 71-121.000.
Hubbard, James H.: *See*—
Howard, Guy J.; Hubbard, James H.; McCrumb, Walter C.; and Spivey, Paul R., 4,322,813, Cl. 364-900.000.
Hubbard, Merton R., to Hills Bros. Coffee, Inc. High speed process for roasting coffee. 4,322,447, Cl. 426-467.000.
Huber, Calvin O.; Schick, Karl G.; and Coburn, Joel T., to Electric Power Research Institute, Inc. Method for determining particular species of chlorine in a water sample. 4,322,215, Cl. 23-230.00R.
Huber, Wilhelm; Mammach, Peter; and Weingand, Kaspar, to Siemens Aktiengesellschaft. Spacer mount in a gas-discharge display device. 4,322,656, Cl. 313-485.000.
Hudec, Donald P. Method and apparatus for degassing fluids. 4,322,226, Cl. 55-41.000.
Huebsch, Donald L.: *See*—
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Hugelshofer, Paul: *See*—
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Huges Aircraft Company: *See*—
Harvey, Robin J., 4,322,661, Cl. 315-344.000.
Hughes Aircraft Company: *See*—
Fry, Stephen M., 4,322,693, Cl. 372-60.000.
Job, Frederick D.; and Eberly, Charles E., 4,322,776, Cl. 361-386.000.
Hughes, Gordon, deceased (by Hughes, Margaret, Mabel Mottershead, legal representative), to International Computers Limited. Display devices. 4,322,720, Cl. 340-825.810.
Hughes, Jeffrey; and Murray, Gerard J., to Imperial Chemical Industries Limited. Modified isocyanate compositions. 4,322,364, Cl. 260-453.0AM.
Hughes, Margaret, Mabel Mottershead, legal representative: *See*—
Hughes, Gordon, deceased, 4,322,720, Cl. 340-825.810.
Hughes, Raymond B., to General Electric Company. High temperature paint. 4,322,332, Cl. 525-424.000.
Huibers, Derk T. A.: *See*—
Chao, James C.; and Huibers, Derk T. A., 4,322,569, Cl. 568-863.000.
Hull, Donald R., to Glen Head Inc. Apparatus for treatment of yarn in package form. 4,321,808, Cl. 68-43.000.
Humphreys, John C. Method and apparatus for inserting a gusset in panti-hose. 4,321,881, Cl. 112-262.200.
Hums, Norbert: *See*—
Heess, Emil; Hums, Norbert; and Krug, Kurt, 4,322,446, Cl. 426-330.400.
Hunschede, Karlheinz; and Krebs, Helmut, to Mannesmann Rexroth GmbH. Pilot operated pressure relief valve. 4,321,941, Cl. 137-116.300.
Hurley, Patrick S. Protective case for a sports card or similar collectible article. 4,322,001, Cl. 206-449.000.
Hurst, George P.; and Svensson, Assar N., to Skega Aktiebolag. Method of producing curved wear lining. 4,321,742, Cl. 29-445.000.
Husted, Jack E., to Micro Display Systems, Inc. Electronic timepiece having conductive face cover for implementing display function. 4,322,833, Cl. 368-69.000.
Hyatt, Gilbert P. Memory system having servo compensation. 4,322,819, Cl. 365-45.000.
Hydroc Gesteinsbohrtechnik GmbH: *See*—
Klemm, Gunter, 4,321,974, Cl. 175-92.000.
Hydrocarbon Research, Inc.: *See*—
Chao, James C.; and Huibers, Derk T. A., 4,322,569, Cl. 568-863.000.
Hynes, William T. Batting practice device. 4,322,075, Cl. 273-26.00E.
I. W. Industries, Inc.: *See*—
Warshawsky, Jerome, 4,322,098, Cl. 285-264.000.
Ichikawa, Osamu: *See*—
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Ichimura, Masaaki: *See*—
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Iida, Kazuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Recording character configuration changing system. 4,322,717, Cl. 340-146.3AH.
Iida, Tetsuya: *See*—
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Ikeda, Hiroharu; Shimozato, Yasuyuki; and Sekine, Kazuo, to Japan Synthetic Rubber Co., Ltd. Rubber composition containing cross-linkable processing aid. 4,322,319, Cl. 525-194.000.
Ikegami, Shiro: *See*—
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,322,402, Cl. 424-78.000.
Ikuzawa, Masanori: *See*—
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,322,408, Cl. 424-180.000.
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,322,409, Cl. 424-180.000.
Illgen, Lester. Plumb bob holder. 4,321,755, Cl. 33-393.000.
Illinois Tool Works Inc.: *See*—
Fusari, Mario P., 4,321,753, Cl. 33-179.50B.
Imai, Sigeru, to Shintomi Golf Co., Ltd. Golf club head. 4,322,083, Cl. 273-167.00F.
Imamura, Hiroshi: *See*—
Ishii, Yoshiya; Fujitani, Nobuyuki; Imamura, Hiroshi; Arai, Kazuyoshi; and Aoki, Toshiaki, 4,322,174, Cl. 403-12.000.
Imanaka, Hiroshi: *See*—
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Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,322,341, Cl. 260-112.50R.

Imperial Chemical Industries Limited: *See—*
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Hughes, Jeffrey; and Murray, Gerard J., 4,322,364, Cl. 260-453.0AM.
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Inami, Yasuhiko: *See—*
Uede, Hisashi; Yano, Kohzo; Hamada, Hiroshi; Nakauchi, Hiroshi; and Inami, Yasuhiko, 4,322,133, Cl. 350-357.000.

Inner-Tite Corporation: *See—*
Davis, George W.; Kulzer, Hank; and Nielsen, Anker, 4,321,740, Cl. 29-402.090.

Inoue, Atsushi; Yamada, Hiromichi; and Suzuki, Kenji, to Murata Manufacturing Co., Ltd. Acoustic surface wave device. 4,322,651, Cl. 310-313.00B.

Inoue, Kiyoshi: *See—*
Tachikawa, Kyoji; Inoue, Kiyoshi; and Togano, Kazumasa, 4,321,749, Cl. 29-599.000.

Inoue, Noriyuki: *See—*
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Intel Corporation: *See—*
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Andersson, Kurt-Inge; Gjerstad, Victor; Gohl, Karl G.; Hallberg, Lars; Norstedt, Bertil; and Schaal, Helmut, 4,322,793, Cl. 364-200.000.
Barbour, Donald R.; Lemke, Guido A.; and Magdo, Steven, 4,322,778, Cl. 361-414.000.
Comerford, Liam D.; Harper, John S.; and Lean, Eric G., 4,322,127, Cl. 350-96.210.
Cooper, Evert S., 4,322,769, Cl. 361-88.000.
Dodge, John H.; and Ernst, Larry M., 4,322,847, Cl. 371-20.000.
Fennel, John W., Jr.; and Oblonsky, Jan G., 4,322,845, Cl. 370-104.000.
Francis, David B., 4,321,932, Cl. 128-696.000.
Howard, Guy J.; Hubbard, James H.; McCrumb, Walter C.; and Spivey, Paul R., 4,322,813, Cl. 364-900.000.
Makhijani, Manik P., 4,321,738, Cl. 29-76.00R.
Miller, Robert J., 4,322,453, Cl. 427-89.000.
Pricer, Wilbur D.; and Selleck, James E., 4,322,823, Cl. 365-184.000.

International Computers Limited: *See—*
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International Standard Electric Corporation: *See—*
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Vance, Ian A. W., 4,322,851, Cl. 375-88.000.
Warren, Stanley W., 4,322,125, Cl. 350-1.600.

International Telephone and Telegraph Corporation: *See—*
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InterNorth, Inc.: *See—*
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Ionics Incorporated: *See—*
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Iowa State University Research Foundation, Inc.: *See—*
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IRECO Chemicals: *See—*
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Isayama, Katsuhiko: *See—*
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Ishida, Hiroshi: *See—*
Kawada, Shigeki; Ishida, Hiroshi; and Koiwai, Yutaka, 4,322,671, Cl. 318-798.000.

Ishida, Yukihito: *See—*
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,322,402, Cl. 424-78.000.

Ishigaki, Yoshio: *See—*
Mogi, Takao; Murakami, Shigetoshi; Okada, Hisao; and Ishigaki, Yoshio, 4,322,855, Cl. 455-151.000.
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Ishihara, Yasuo, to Nippon Electric Co., Ltd. Smear and/or blooming in a solid state charge transfer image pickup device. 4,322,753, Cl. 358-213.000.

Ishii, Keizo: *See—*
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Ishii, Takatoshi, to Tokyo Shibaura Electric Co., Ltd. Error display systems. 4,322,791, Cl. 364-200.000.

Ishii, Yoshiya; Fujitani, Nobuyuki; Imamura, Hiroshi; Arai, Kazuyoshi; and Aoki, Toshiaki, to Nippondenso Co., Ltd. Cam shaft locking device for fuel injection pump. 4,322,174, Cl. 403-12.000.

Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, to Ryuichi Sato. Germanium-containing organic polymer and its use in the treatment of allergic disease. 4,322,402, Cl. 424-78.000.

Ishikura, Shin-ichi: *See—*
Mizuguchi, Ryuzo; Ishikura, Shin-ichi; and Ishii, Keizo, 4,322,324, Cl. 528-290.000.

Ishimaru, Shingo: *See—*
Minamizono, Junji; Kawashima, Yoshiro; Ishimaru, Shingo; and Inoue, Noriyuki, 4,322,494, Cl. 430-599.000.

Ishizuka, Hiroshi; and Kunogi, Kazuhiko, to Nissan Motor Company, Limited. Structure for mounting cover of controller in battery fork lift. 4,322,107, Cl. 296-146.000.

Ismailov, Ali R. O.: *See—*
Aliev, Sakhib M. O.; Aliev, Vagab S.; Gadzhiev, Tofik A.; Ismailov, Ali R. O.; Gasanov, Arif I. O.; and Guseinov, Vagif B. G. O., 4,322,515, Cl. 526-213.000.

Isobe, Takashi: *See—*
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Isuzu Motors Limited: *See—*
Kawamura, Hideo; and Itou, Takahiko, 4,322,604, Cl. 219-497.000.

Iten, Clemens A., to American Safety Razor Company. Package for securing slotted safety razors. 4,322,002, Cl. 206-493.000.

Ito, Isao, to Nippondenso Co., Ltd. Small dynamoelectric machine and method for making same. 4,321,748, Cl. 29-596.000.

Ito, Osamu: *See—*
Hisegawa, Takashi; Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; Kumano, Mikio; and Sumiyoshi, Masaharu, 4,322,800, Cl. 364-431.050.

Ito, Susumu; and Ban, Mikichi, to Canon Kabushiki Kaisha. Phase shifting mirror. 4,322,130, Cl. 350-288.000.

Ito, Takeo: *See—*
Wada, Moriyasu; Suzuki, Shuichi; Ito, Takeo; and Hayase, Shuzi, 4,322,513, Cl. 525-507.000.

Itoh, Masanori: *See—*
Nakano, Keita; and Itoh, Masanori, 4,322,469, Cl. 428-212.000.

Itou, Takahiko: *See—*
Kawamura, Hideo; and Itou, Takahiko, 4,322,604, Cl. 219-497.000.

ITT Industries, Inc.: *See—*
Burgdorf, Jochen; and Storzel, Karl, 4,321,984, Cl. 188-73.390.

Iwami, Etsuji: *See—*
Arakawa, Kouji; Nomaguchi, Kanemasa; and Iwami, Etsuji, 4,322,334, Cl. 523-512.000.

Iwaoka, Toshio: *See—*
Kobayashi, Kyoji; Tsutsui, Yujiro; Kaneko, Noboru; Hidaka, Ekiro; Konishi, Kiyoshi; and Iwaoka, Toshio, 4,321,901, Cl. 123-352.000.

Izawa, Motowo: *See—*
Asai, Mitsuko; Izawa, Motowo; and Tanida, Seiichi, 4,322,348, Cl. 260-239.30P.

Izutsu, Minoru: *See—*
Masutomi, Hiroshi; and Izutsu, Minoru, 4,322,386, Cl. 422-171.000.

J. I. Case Company: *See—*
Nissen, Roland N., 4,321,980, Cl. 180-333.000.

J. P. Stevens and Company Inc.: *See—*
Black, Thomas C., 4,321,735, Cl. 28-155.000.

J. T. Baker Chemicals B.V.: *See—*
Raaijmakers, Christiaan E., 4,322,313, Cl. 252-408.000.

Jachimowicz, Felek, to W. R. Grace & Co. Alkylation of polyamines. 4,322,530, Cl. 544-403.000.

Jackson, Leigh F.; and Martin, Niles J., to Westinghouse Electric Corp. Electrical switch and actuator therefor having both linear and angular adjustment therebetween. 4,322,703, Cl. 335-205.000.

Jacobs, Cornelis A. J.: *See—*
Tielemans, Peter A. W.; and Jacobs, Cornelis A. J., 4,322,654, Cl. 313-218.000.

Jacobs, Eugene F., to Phillips Petroleum Company. Reactive polyester resin-plasticizer composition. 4,322,505, Cl. 525-44.000.

Jacobson, Kenneth E.; Gutierrez, William S.; and Patterson, Williams G., to Beckman Instruments, Inc. Lubrication and cooling system for a high speed ultracentrifuge drive assembly. 4,322,030, Cl. 233-23.00R.

Jaeckel, Lothar: *See—*
Kleber, Rolf; and Jaeckel, Lothar, 4,322,302, Cl. 252-8.800.

Jager, Gerhard; Klauke, Erich; Brandes, Wilhelm; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Combating fungi with 1-halo-1-propyn-3-ols. 4,322,442, Cl. 424-341.000.

Jagielski, David: *See—*
Frias, Ronald J.; Gross, Roger A.; and Jagielski, David, 4,322,158, Cl. 355-27.000.

Jahn, Jurgen: *See—*
Claussen, Nils; Jahn, Jurgen; and Petzow, Gunter, 4,322,249, Cl. 501-88.000.

Jain, Surendar M., to Ionics Incorporated. Fractionation of protein mixtures. 4,322,275, Cl. 204-180.00P.

Jamaluddin, Aziz A. Pipe burnout oven with pollution control. 4,322,203, Cl. 432-72.000.

James, David F.; Oliphant, Peter A.; and Effler, Timothy A., to Mattel, Inc. Electronic game system. 4,322,074, Cl. 273-1.00E.

Janata, Jiri; and Ure, Roland W., Jr., to University of Utah Research Foundation. Chemically sensitive JFET transducer devices utilizing a blocking interface. 4,322,680, Cl. 324-71.0SN.

Japan Atomic Energy Research Institute: *See—*
Matsuda, Osamu; Watanabe, Terutaka; Tabata, Yoneho; and Machi, Sueo, 4,322,511, Cl. 525-344.000.

Japan Synthetic Rubber Co., Ltd.: *See*—
Ikeda, Hiroharu; Shimozato, Yasuyuki; and Sekine, Kazuo, 4,322,319, Cl. 525-194.000.
Jarvis, Michael. Object-spacing tool and method thereof. 4,322,064, Cl. 269-43.000.
Jemec, Raoul, to Swiss Aluminium Ltd. Tank for an electrolytic cell. 4,322,282, Cl. 204-243.00R.
Jenkins, Ronald, to North American Philips Corporation. Diffracted beam monochromator. 4,322,618, Cl. 250-272.000.
Jensen, Harald; Schmidt, Erwin; Mitzlaff, Michael; Cramer, Jurgen; Pistorius, Rudolf; Pietsch, Hartmut; and Dehmer, Klaus, to Hoechst Aktiengesellschaft. Process for the preparation of N-vinyl-N-alkylcarboxylic acid amides. 4,322,271, Cl. 204-73.00R.
Jeschke, Willi; Rambausek, Hugo; and Schilling, Paul, to Heidelberger Druckmaschinen Aktiengesellschaft. Device for driving or synchronizing cylinders in offset printing presses. 4,321,869, Cl. 101-136.000.
Jidosha Denki Kogyo Kabushiki Kaisha: *See*—
Kobayashi, Kyoji; Tsutsui, Yujiro; Kaneko, Noboru; Hidaka, Ekiro; Konishi, Kiyoshi; and Iwaoka, Toshio, 4,321,901, Cl. 123-352.000.
Job, Frederick D.; and Eberly, Charles E., to Hughes Aircraft Company. Thermal interconnection. 4,322,776, Cl. 361-386.000.
Jobsis, Frans F.; Keizer, Johannes H.; and Overaker, Ronald F., to Duke University, Inc. Apparatus for monitoring metabolism in body organs. 4,321,930, Cl. 128-633.000.
Joh, Yasushi, to Nippon Zeon Co., Ltd. Method of manufacturing hollow fiber. 4,322,381, Cl. 264-41.000.
Johnson, Alfred L., Jr., to Lajet Energy Company. Tubular beam joint. 4,322,176, Cl. 403-219.000.
Johnson, Arthur C. W., to Combustion Research Corporation. Unitary matrix, valve and fan housing for energy recovery. 4,322,229, Cl. 55-179.000.
Johnson, Dale V.; and Childers, Thomas W., to Exxon Production Research Company. Depth measurements. 4,321,751, Cl. 33-126.500.
Johnson, David A.; Gilly, Robert L.; and Wagener, Kenneth B., to Akzona Incorporated. Polyester/polyether segmented copolymers stabilized against degradation by UV light via copolymerization with analogs of 2,2,6,6-tetramethylpiperidine derivatives. 4,322,522, Cl. 528-289.000.
Johnson, Erlon F., to AMP Incorporated. Tool for cutting optical fibers. 4,322,025, Cl. 225-96.500.
Johnson, George A.: *See*—
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,322,308, Cl. 252-107.000.
Johnson, James C., to Westinghouse Electric Corp. Starting and operating apparatus for high-pressure sodium lamps. 4,322,660, Cl. 315-289.000.
Johnson, Richard T.: *See*—
Frailing, Charles E.; Dougherty, Thomas J.; and Johnson, Richard T., 4,322,685, Cl. 324-429.000.
Johnson, Ronald E.: *See*—
Heimbach, Kim P.; and Johnson, Ronald E., 4,322,467, Cl. 428-200.000.
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., to Upjohn Company, The. PGI_2 11,15-Ether intermediates. 4,322,525, Cl. 542-421.000.
Johnson, Thomas M.: *See*—
Athey, Stuart E.; Johnson, Thomas M.; and Shaeffer, Raymond P., 4,321,849, Cl. 83-816.000.
Johnston, J. O'Neal: *See*—
Metcalf, Brian W.; and Johnston, J. O'Neal, 4,322,416, Cl. 424-242.000.
Jordaan, Gert J. Exercising apparatus. 4,322,070, Cl. 272-73.000.
Jotwani, Haresh C.: *See*—
Fellinger, Frank; Willett, Michael C.; and Jotwani, Haresh C., 4,322,844, Cl. 370-84.000.
Journee, Maurice A., to NEFCO, Division Neiman Industries, Inc. Windscreen wiper blade assembly. 4,321,725, Cl. 15-250.320.
Judd, Myles A.: *See*—
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,322,816, Cl. 364-900.000.
Just, Christoph: *See*—
Wagner, Reinhard; Werner, Gerhard; Hencken, Gunther; and Just, Christoph, 4,322,504, Cl. 525-7.100.
K. Shoemakers Limited: *See*—
Painter, Donald S.; and Graeme-Barber, Christopher, 4,321,721, Cl. 12-146.00C.
Kabel-und Metallwerke Gutehoffnungshutte: *See*—
Hildebrand, Helmut; and Dunker, Gerhard, 4,322,699, Cl. 333-237.000.
Kabushiki Kaisha Kobe Seiko Sho: *See*—
Tanimoto, Tatsuo; Ozawa, Ryuichi; and Tarumasa, Noriyoshi, 4,322,185, Cl. 407-23.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Uranaka, Kyoji; Tarumizu, Yasumasa; Hara, Hideo; and Ichimura, Masaaki, 4,321,793, Cl. 60-358.000.
Kabushiki Kaisha Medos Kenkyusho: *See*—
Takahashi, Nagashige; Harada, Shinichi; and Yamamori, Eiji, 4,322,129, Cl. 350-269.000.
Kaelin, Joseph R. Surface aerating rotor. 4,322,377, Cl. 261-91.000.
Kageyama, Hironori: *See*—
Onoda, Takeru; Wada, Keisuke; Kageyama, Hironori; Yamanouchi, Hideki; and Karube, Kenji, 4,322,314, Cl. 252-412.000.
Kaire, Jean-Claude; and Six, Jean-Claude G., to U.S. Philips Corporation. Device for protection in the case of d.c. supply-voltage drop. 4,322,634, Cl. 307-200.00A.
Kakeno, Sadao: *See*—
Furukawa, Tatsuya; and Kakeno, Sadao, 4,322,732, Cl. 346-75.000.
Kalamon, Bruce, to Teleflex Incorporated. Motion transmitting remote control assembly (swivel sleeve). 4,321,840, Cl. 74-501.00R.
Kaland, LaMont A., to Ataco Steel Products Co. Wheel height adjuster. 4,321,785, Cl. 56-17.200.
Kaman Aerospace Corporation: *See*—
Bossler, Robert B., Jr., 4,321,805, Cl. 64-19.000.
Kamata, Shigeru; and Isobe, Takashi, to Canon Kabushiki Kaisha. Mechanical mounting system for zoom objective. 4,322,150, Cl. 354-195.000.
Kamerbeek, Evert M. H.: *See*—
Cornelissen, Gerardus A. A. F.; Gerrits, Hendrik J.; and Kamerbeek, Evert M. H., 4,322,624, Cl. 250-406.000.
Kamiyama, Morihiro: *See*—
Manabe, Osamu; Utsunomiya, Masayasu; Kamiyama, Morihiro; Tsutsui, Michiaki; and Matsumoto, Masayuki, 4,322,214, Cl. 8-582.000.
Kamody, John F., to Koppers Company, Inc. Process for the superatmospheric gasification of solid carbonaceous materials. 4,322,221, Cl. 48-197.00R.
Kamoshita, Katsuo: *See*—
Kobayashi, Shinsaku; Kamoshita, Katsuo; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Takashi; and Kojima, Mikio, 4,322,420, Cl. 424-251.000.
Kamyr, Inc.: *See*—
Funk, Erwin D.; and Barrett, Mark D., 4,322,184, Cl. 406-82.000.
Kando, Toru: *See*—
Satoh, Mituo; Sato, Koji; and Kando, Toru, 4,322,152, Cl. 354-204.000.
Kaneda, Aizo: *See*—
Nishi, Kunihiko; Wakashima, Yoshiaki; Suzuki, Akira; Kaneda, Aizo; and Tuzuku, Sumumu, 4,322,593, Cl. 219-10.810.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Mita, Tetsuo; Tani, Nobutaka; Nakanishi, Hirokazu; Takase, Junji; and Isayama, Katsuhiko, 4,322,272, Cl. 204-159.130.
Kaneko, Noboru: *See*—
Kobayashi, Kyoji; Tsutsui, Yujiro; Kaneko, Noboru; Hidaka, Ekiro; Konishi, Kiyoshi; and Iwaoka, Toshio, 4,321,901, Cl. 123-352.000.
Kanno, Susumu, to Alps Electric Co., Ltd. Transistorized voltage regulator. 4,322,674, Cl. 323-231.000.
Kanojia, Ramesh M., to Ortho Pharmaceutical Corporation. Novel cycloheptanes. 4,322,357, Cl. 260-345.80R.
Kansas State Univ. Research Foundation: *See*—
Fan, Liang-Tseng; and Wen, Chin-Yung, 4,322,296, Cl. 210-610.000.
Kaplan, Leonard: *See*—
Ahmad, Nawaz; Kaplan, Leonard; and Ziets, George, 4,322,399, Cl. 424-44.000.
Kaplan, Murray A.; and Granatek, Alphonse P., to Bristol-Myers Company. Salts of 2-hydroxymalonate platinum complexes. 4,322,362, Cl. 260-429.00R.
Kaplan, Murray A.; and Granatek, Alphonse P., to Bristol-Myers Company. Process for the preparation of microcrystalline cisplatin. 4,322,391, Cl. 423-209.000.
Karr, Robert L.: *See*—
Szabo, Tibor; and Karr, Robert L., 4,321,845, Cl. 82-2.500.
Karrer, Friedrich, to Ciba-Geigy Corporation. Diazaphospholanes and diazaphosphorinanes. 4,322,531, Cl. 546-22.000.
Karube, Kenji: *See*—
Onoda, Takeru; Wada, Keisuke; Kageyama, Hironori; Yamanouchi, Hideki; and Karube, Kenji, 4,322,314, Cl. 252-412.000.
Kaspar, Mark L.; and Lowey, James F., to Alco Standard Corporation. Adhesive based on a starch and acrylamide graft copolymer. 4,322,472, Cl. 428-350.000.
Kasting, Edward W., to Cummins Engine Company. Gear plate assembly for mounting and positioning an accessory drive train. 4,321,896, Cl. 123-195.00A.
Katayama, Akira; and Higashi, Koichi, to Nippon Kogaku K.K. Display device within the viewfinder of a camera. 4,322,153, Cl. 354-225.000.
Kato, Kenneth H., to Minnesota Mining and Manufacturing Co. Immunoassay. 4,322,495, Cl. 435-7.000.
Kato, Yasuji, to Yamasa Tokei Meter Co., Ltd. Pedometer assembly. 4,322,609, Cl. 235-105.000.
Kato, Yoshito: *See*—
Fukuma, Nobuo; Kato, Yoshito; and Terui, Takao, 4,322,669, Cl. 318-571.000.
Katoh, Masatoshi: *See*—
Yamanaka, Minoru; Haneda, Hideo; Katoh, Masatoshi; and Suzuki, Mitsuyuki, 4,322,057, Cl. 251-129.000.
Katsura, Hakuji: *See*—
Okazaki, Tomomi; Tomita, Kenichi; Katsura, Hakuji; Tejima, Masayuki; and Naganuma, Masako, 4,322,544, Cl. 560-55.000.
Katsuyama, Kazuki: *See*—
Suenobu, Koreyoshi; Kohara, Masanori; Katsuyama, Kazuki; and Kinishi, Ryoichi, 4,322,519, Cl. 528-45.000.
Kaufman, Richard C. Method and apparatus for measuring body fat. 4,321,752, Cl. 33-169.00B.
Kawabayashi, Jun. Image dividing system for use in television. 4,322,741, Cl. 358-56.000.

Kawada, Shigeki; Ishida, Hiroshi; and Koiwai, Yutaka, to Fujitsu Fanuc Limited. Induction motor drive apparatus. 4,322,671, Cl. 318-798.000.

Kawahara, Yoshinobu. Knock-down type mailing parcel case. 4,322,028, Cl. 229-40.000.

Kawai, Hisasi: *See*—
Kohama, Tokio; Matsui, Takeshi; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,322,799, Cl. 364-431.060.

Kawamura, Hideo; and Itou, Takahiko, to Isuzu Motors Limited. Engine start assisting device. 4,322,604, Cl. 219-497.000.

Kawamura, Kunio; and Ueda, Hiroshi, to Minolta Camera Kabushiki Kaisha. Single-lens reflex camera light measurement and exposure control apparatus. 4,322,142, Cl. 354-25.000.

Kawasaki, Masami; and Sadakane, Hirofumi, to Kubota, Ltd. Mid-mounted mower. 4,321,783, Cl. 56-15.800.

Kawashima, Kenichi, to Fujitsu Limited. Method of electron beam exposure. 4,322,626, Cl. 250-492.200.

Kawashima, Yoshiro: *See*—
Minamizono, Junji; Kawashima, Yoshiro; Ishimaru, Shingo; and Inoue, Noriyuki, 4,322,494, Cl. 430-599.000.

Kawaski Yukon Kabushiki Kaisha: *See*—
Bessho, Michio, 4,321,818, Cl. 72-453.020.

Kay Fries, Inc.: *See*—
Kesslin, George; and Kelly, Kenneth W., 4,322,548, Cl. 562-401.000.

Kearney-National, Inc.: *See*—
Thrash, Robert N., 4,322,706, Cl. 337-417.000.

Keiper Automobiltechnik GmbH & Co. KG: *See*—
Berghaus, Klaus; Lehmann, Gerhard; Berghof, Hans-Joachim; and Honecker, Hans-Jurgen, 4,322,112, Cl. 297-362.000.

Keizer, Johannes H.: *See*—
Jobsis, Frans F.; Keizer, Johannes H.; and Overaker, Ronald F., 4,321,930, Cl. 128-633.000.

Keller, Gerald W.: *See*—
Yaeger, Ronald J.; and Keller, Gerald W., 4,321,797, Cl. 62-79.000.

Kelly, Calvin E.; and Nicely, Thomas E., to United States Steel Corporation. Adjustable spring latch for coke oven doors or the like. 4,322,101, Cl. 292-260.000.

Kelly, Kenneth W.: *See*—
Kesslin, George; and Kelly, Kenneth W., 4,322,548, Cl. 562-401.000.

Kelly, Thomas J., to Woolston-Kelly Survival Limited. Food carrying belt. 4,322,024, Cl. 224-224.000.

Kelpin, Thomas G., to Beloit Corporation. Swivel mounted propulsion and steering apparatus. 4,322,208, Cl. 440-37.000.

Kenneth Mason Holdings Limited: *See*—
Mason, Kenneth, 4,322,754, Cl. 358-296.000.

Kenney, John T.: *See*—
Baron, William J.; Kenney, John T.; and Townsend, Wesley P., 4,322,457, Cl. 427-259.000.

Kent Manufacturing Co., Inc.: *See*—
Hake, Kenneth A.; and Palen, Nelson J., 4,321,971, Cl. 172-710.000.

Kernforschungsanlage Julich Gesellschaft mit Berschrankter Haftung, Rosenthal Technik AG: *See*—
Forster, Siegfried; Krauth, Axel; Maier, Horst R.; and Pohlmann, Hans J., 4,321,964, Cl. 165-165.000.

Kesslin, George; and Kelly, Kenneth W., to Kay Fries, Inc. Resolution of racemic mandelic acid. 4,322,548, Cl. 562-401.000.

Kettner, Roland, to Mobil Oil Corporation. Process for alleviating sulfur deposition in sour gas wells. 4,322,307, Cl. 252-8.55B.

Khan, Ashfaq R.; Macrander, Max S.; and Krylow, Konstanty E., to GTE Automatic Electric Labs Inc. Clock selection circuit. 4,322,580, Cl. 179-18.0EE.

Khosla, Rajinder P.: *See*—
Lee, Teh-Hsuang; and Khosla, Rajinder P., 4,322,638, Cl. 307-311.000.

KiBing, Wolfgang: *See*—
Reiner, Roland; KiBing, Wolfgang; Doring, Helga; Koster-Losche, Kari; and Heide, Helmut, 4,322,398, Cl. 424-19.000.

Kiehs, Karl: *See*—
Baumann, Annegrit; Kiehs, Karl; Hamprecht, Gerhard; Lange, Arno; and Adolphi, Heinrich, 4,322,413, Cl. 424-200.000.

Kikuchi, Naokazu. Rotary type rubber stamp. 4,321,868, Cl. 101-111.000.

Kilby, Jack S.; McKee, William R.; and Porter, Wilbur A., to Texas Instruments Incorporated. Fabrication process for semiconductor bodies. 4,322,379, Cl. 264-13.000.

Kimble, James B., to Phillips Petroleum Company. Recovery of mercaptoalkanoic acids using alkylene glycol ethers. 4,322,550, Cl. 562-512.000.

Kimm, Dieter, to Messer Griesheim GmbH. Scarfing torch. 4,322,059, Cl. 266-75.000.

Kindler, Horst: *See*—
Tappe, Horst; Kindler, Horst; Roth, Kurt; and Ong, Sien L., 4,322,213, Cl. 8-449.000.

King, William C.: *See*—
El Hamamsy, Mahmoud A.; King, William C.; and Knight, Stephen, 4,322,767, Cl. 361-56.000.

Kinishi, Ryoichi: *See*—
Suenobu, Koreyoshi; Kohara, Masanori; Katsuyama, Kazuki; and Kinishi, Ryoichi, 4,322,519, Cl. 528-45.000.

Kinjo, Hisao; and Ozawa, Keiji, to Victor Company of Japan, Ltd. High density recording system using side-by side information and servo tracks. 4,322,836, Cl. 369-43.000.

Kinoshita, Mitsuo; and Omori, Takashi, to Hitachi, Ltd. Control apparatus for residual heat removal system for nuclear reactor. 4,322,267, Cl. 376-216.000.

Kircher, Morton S.: *See*—
Wright, David B.; Moore, Sanders H.; and Kircher, Morton S., 4,322,281, Cl. 204-237.000.

Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, to Fujisawa Pharmaceutical Company, Ltd. Peptide, process for preparation thereof and use thereof. 4,322,341, Cl. 260-112.50R.

Klauke, Erich: *See*—
Jager, Gerhard; Klauke, Erich; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,322,442, Cl. 424-341.000.
Niggemann, Johannes; Kuhle, Engelbert; and Klauke, Erich, 4,322,237, Cl. 71-68.000.

Kleber, Rolf; and Jaeckel, Lothar, to Hoechst Aktiengesellschaft. Agent for the liquid paraffin waxing of yarns. 4,322,302, Cl. 252-8.800.

Kleemann, Axel; Martens, Jurgen; and Weigel, Horst, to Degussa Aktiengesellschaft. Process for the production of 4-aminobutyramide hydrochloride. 4,322,552, Cl. 564-198.000.

Klein, Robert R.: *See*—
Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S., deceased; and Klein, Robert R., 4,322,329, Cl. 524-389.000.

Kleis, Derk; and Van Gorsel, Johannis A., to U.S. Philips Corporation. Sound reproduction in a space with an independent sound source. 4,322,579, Cl. 179-1.00D.

Klemm, Gunter, to Hydroc Gesteinsbohrtechnik GmbH. Annular drilling hammer. 4,321,974, Cl. 175-92.000.

Klemm, Kurt; Kruger, Uwe; Rapp, Erich; Wolf, Horst; and Kraas, Ekkehard, to BYK Gulden Lomberg Chemische Fabrik GmbH. ω-[2-(N-Lower alkyl-benzamido)-phenyl]-alkanoic acids, their use, and medicaments containing them. 4,322,439, Cl. 424-319.000.

Klocke, Richard R. Burnishing brush structure. 4,321,722, Cl. 15-29.000.

Klug, Jerry J.: *See*—
Schoen, Donald W.; and Klug, Jerry J., 4,322,230, Cl. 55-316.000.

Knight, Stephen: *See*—
El Hamamsy, Mahmoud A.; King, William C.; and Knight, Stephen, 4,322,767, Cl. 361-56.000.

Knox, Ronald W., to RJD. Aerator. 4,322,292, Cl. 210-198.100.

Ko, Sai Y., to Vitapharm Pharmaceutical Pty. Ltd. Electrolyte drink. 4,322,407, Cl. 424-128.000.

Kobashi, Kiyoshi: *See*—
Kohama, Tokio; Matsui, Takeshi; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,322,799, Cl. 364-431.060.

Kobayashi, Akio: *See*—
Kondo, Toshio; Kobayashi, Akio; Eino, Tomomi; and Fukue, Naofumi, 4,321,903, Cl. 123-440.000.

Kobayashi, Kozo: *See*—
Ohya, Hiroshi; and Kobayashi, Kozo, 4,322,758, Cl. 360-31.000.

Kobayashi, Kyoji; Tsutsui, Yujiro; Kaneko, Noboru; Hidaka, Ekiro; Konishi, Kiyoshi; and Iwaoka, Toshio, to Jidosha Denki Kogyo Kabushiki Kaisha. Automatic speed control device. 4,321,901, Cl. 123-352.000.

Kobayashi, Shinsaku; Kamoshita, Katsuo; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Takashi; and Kojima, Mikio, to Sankyo Company Limited; and UBE Industries. Method of using 4-anilinoquinazoline derivatives as analgesic and anti-inflammatory agents. 4,322,420, Cl. 424-251.000.

Kobayashi, Shinsaku: *See*—
Kojima, Koichi; Sakai, Kiyoshi; and Kobayashi, Shinsaku, 4,322,435, Cl. 424-305.000.

Kobayashi, Takashi: *See*—
Kobayashi, Shinsaku; Kamoshita, Katsuo; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Takashi; and Kojima, Mikio, 4,322,420, Cl. 424-251.000.

Kobe, Inc.: *See*—
Erickson, John W., 4,322,199, Cl. 415-89.000.

Kobe Steel, Limited: *See*—
Kohno, Norihiko, 4,321,796, Cl. 62-52.000.

Kobus, Gerhard S., to Xerox Corporation. Document registration apparatus and method. 4,322,160, Cl. 355-75.000.

Koch, Franklin O., Jr., to Caterpillar Tractor Co. Hydrodynamic retarding brake and oil-cooled driveline clutch. 4,321,990, Cl. 192-13.00R.

Koch, Robert J.: *See*—
Maluta, James; Wasson, John H.; and Koch, Robert J., 4,321,913, Cl. 128-1.00B.

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Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,322,341, Cl. 260-112.50R.

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Kawada, Shigeki; Ishida, Hiroshi; and Koiwai, Yutaka, 4,322,671, Cl. 318-798.000.

Kojima, Koichi; Sakai, Kiyoshi; and Kobayashi, Shinsaku, to Sankyo Company Limited. Prostacyclin compounds. 4,322,435, Cl. 424-305.000.

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Kondo, Toshio; Kobayashi, Akio; Eino, Tomomi; and Fukue, Naofumi, to Nippondenso Co., Ltd. Method of feedback controlling air-fuel ratio. 4,321,903, Cl. 123-440.000.

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Konishiroku Photo Industry Co., Ltd.: *See—*
Mitchell, Charles S., 4,322,069, Cl. 271-296.000.

Konrad, Gunther; and Lieske, Edgar, to Henkel Kommanditgesellschaft auf Aktien. Oxidation hair dyes comprising substituted benzotriazoles. 4,322,212, Cl. 8-407.000.

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Hartung, Rodney L.; McCann, Dennis L.; Uhre, Larry W.; Bergmann, Richard P.; Hostetter, James A.; and Konrad, Nicholas J., 4,322,168, Cl. 366-15.000.

Koppe, Uwe; Stegmanns, Walter; and Weisner, Horst, to Maschinenfabrik Korfmann GmbH. Suction of gases from boreholes in coal mining. 4,321,967, Cl. 166-250.000.

Koppers Company, Inc.: *See—*
Kamody, John F., 4,322,221, Cl. 48-197.00R.

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Bach, Nicholas J.; and Kornfeld, Edmumd C., 4,322,430, Cl. 424-273.00P.

Kornfeld, Edmund C.: *See—*
Bach, Nicholas J.; and Kornfeld, Edmund C., 4,322,540, Cl. 548-369.000.

Korosi, Jeno; Lang, Tibor; Szekely, Jozsef; Andrasi, Ferenc; Zolyomi, Gabor; Borsi, Jozsef; Goldschmidt nee Horvath, Katalin; Hamori, Tamas; Szabo nee Czibula, Gabriella; Meszaros nee Dunai-Kovacs, Zsuzsanna; and Miglecz, Erzsebet. 5H-2,3-Benzodiazepine derivatives. 4,322,346, Cl. 260-239.0BD.

Kortenoeven, Johannes: *See—*
de Putter, Jan A.; and Kortenoeven, Johannes, 4,322,486, Cl. 430-31.000.

Kortick, Leonard R. Travel hair brush. 4,321,723, Cl. 15-184.000.

Kosaka, Yositeru, to Victor Company of Japan, Ltd. System for reproducing video signals in slow-motion mode. 4,322,755, Cl. 360-10.000.

Kostan, Charles C.: *See—*
Fox, David H.; and Kostan, Charles C., 4,321,895, Cl. 123-146.50A.

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Koster-Losche, Kari: *See—*
Reiner, Roland; KiBing, Wolfgang; Doring, Helga; Koster-Losche, Kari; and Heide, Helmut, 4,322,398, Cl. 424-19.000.

Kothe, Gerhard: *See—*
Merz, Ekkehard; and Kothe, Gerhard, 4,322,330, Cl. 523-221.000.

Kott, Hermann, to Trutzschler GmbH & Co. KG. Method and apparatus for driving card flats. 4,321,731, Cl. 19-102.000.

Koyama, Hiroyasu: *See—*
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,322,555, Cl. 564-305.000.

Kozacka, Frederick J., to Gould Inc. Electric fuse, particularly for use in connection with solid state devices. 4,322,704, Cl. 337-159.000.

Kozdon, Peter J., to DTI Security, a Division of Datura International, Inc. Pulsed microwave motion sensor for intrusion detection applications. 4,322,722, Cl. 340-554.000.

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Klemm, Kurt; Kruger, Uwe; Rapp, Erich; Wolf, Horst; and Kraas, Ekkehard, 4,322,439, Cl. 424-319.000.

Kraft, Derald H.; and Wagner, William S., to Dyneer Corporation. Press construction. 4,321,819, Cl. 72-456.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Frewer, Hans; Muller, Rainer; and Schiffers, Ulrich, 4,322,243, Cl. 75-34.000.

Krakow, Heinz; Tomsen, Harald; and Herm, Jurgen, to Blohm & Voss AG. Apparatus for producing large shafts by welding build up. 4,322,596, Cl. 219-73.210.

Kratchmer, James, to Speed-Form Manufacturing Ltd. Wall system utilizing interlocking block and ties. 4,321,779, Cl. 52-425.000.

Kraus, Richard A., to Ford Motor Company. Closed loop low voltage up-converter. 4,322,787, Cl. 363-21.000.

Krause, Robert F., to Westinghouse Electric Corp. Loss characteristics in amorphous magnetic alloys. 4,322,481, Cl. 428-611.000.

Krausse, Jurgen; and Ladenhauf, Wilhelm, to Siemens Aktiengesellschaft. Process for passivating semiconductor members. 4,322,452, Cl. 427-82.000.

Krauth, Axel: *See—*
Forster, Siegfried; Krauth, Axel; Maier, Horst R.; and Pohlmann, Hans J., 4,321,964, Cl. 165-165.000.

Krebs, Helmut: *See—*
Hunschede, Karlheinz; and Krebs, Helmut, 4,321,941, Cl. 137-116.300.

Krebs, Ulrich: *See—*
Hoborn, Jan; and Krebs, Ulrich, 4,321,925, Cl. 128-303.130.

Krechel, Joseph L.; and Purvis, Michael J., to Control Devices, Incorporated. Unloader/check valve. 4,321,940, Cl. 137-116.000.

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Hafner, Walter; Markl, Erich; Eibel, Ludwig; Kreis, Gerhard; Samrowski, Dietrich; Wick, Manfred; Deubzer, Bernward; and Friedrich, Wilhelm, 4,322,473, Cl. 428-391.000.

Krill, Mrs. Peter P.: *See—*
Krill, Peter P., 4,321,844, Cl. 81-3.00R.

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Krug, Kurt: *See—*
Heess, Emil; Hums, Norbert; and Krug, Kurt, 4,322,446, Cl. 426-330.400.

Kruger, Uwe: *See—*
Klemm, Kurt; Kruger, Uwe; Rapp, Erich; Wolf, Horst; and Kraas, Ekkehard, 4,322,439, Cl. 424-319.000.

Krumme, Helmut: *See—*
Heinemann, Otto; Lucke, Helmut; Schobler, Werner; Heiringhoff, Burkhard; and Krumme, Helmut, 4,322,116, Cl. 308-9.000.

Krupp Polysius AG: *See—*
Heinemann, Otto; Lucke, Helmut; Schobler, Werner; Heiringhoff, Burkhard; and Krumme, Helmut, 4,322,116, Cl. 308-9.000.

Krylow, Konstanty E.: *See—*
Khan, Ashfaq R.; Macrander, Max S.; and Krylow, Konstanty E., 4,322,580, Cl. 179-18.0EE.

Kubota, Ltd.: *See—*
Kawasaki, Masami; and Sadakane, Hirofumi, 4,321,783, Cl. 56-15.800.

Kubota, Reiko: *See—*
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,322,555, Cl. 564-305.000.

Kuda, Vladimir: *See—*
Cech, Miloslav; Vasicek, Vladimir; and Kuda, Vladimir, 4,321,947, Cl. 137-556.000.

Kudo, Bosshi; Matsuo, Kazuyoshi; Maki, Takeshi; and Yoshioka, Masamichi, to Agency of Industrial Science and Technology, The. Method for horizontal ribbon crystal growth. 4,322,263, Cl. 156-617.00H.

Kuehnle, Manfred R.; Manhardt, John R.; and Wright, Malor, to Coulter Systems Corporation. Developing latent electrostatic images using a liquid toner and a development electrode. 4,322,488, Cl. 430-103.000.

Kuhle, Engelbert: *See—*
Niggemann, Johannes; Kuhle, Engelbert; and Klauke, Erich, 4,322,237, Cl. 71-68.000.

Kuhlmann, George E.; and Bemis, Alan G., to Standard Oil Company (Indiana). Oxidation of di- and trimethyl aromatic hydrocarbons having ortho-oriented methyl groups in liquid phthalic acid. 4,322,549, Cl. 562-416.000.

Kuhn, Franz J.: *See—*
Losel, Walter; Esser, Franz; Roos, Otto; Reichl, Richard; Kuhn, Franz J.; and Traunecker, Werner, 4,322,418, Cl. 424-248.570.

Kulzer, Hank: *See—*
Davis, George W.; Kulzer, Hank; and Nielsen, Anker, 4,321,740, Cl. 29-402.090.

Kumano, Mikio: *See—*
Hisegawa, Takashi; Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; Kumano, Mikio; and Sumiyoshi, Masaharu, 4,322,800, Cl. 364-431.050.

Kump, Wilhelm: *See—*
Muller, Beat; Kump, Wilhelm; and Wacker, Oskar, 4,322,419, Cl. 424-250.000.

Kunitz, Friedrich-Wilhelm; Puschel, Walter; and Schranz, Karl W., to AGFA-Gevaert Aktiengesellschaft. Process for the development of color photographic images with p-dialkylaminoaniline color developers. 4,322,492, Cl. 430-375.000.

Kunogi, Kazuhiko: *See—*
Ishizuka, Hiroshi; and Kunogi, Kazuhiko, 4,322,107, Cl. 296-146.000.

Kuper, Douglas D.: *See—*
Menezes, William A.; and Kuper, Douglas D., 4,322,814, Cl. 364-900.000.

Kurai, Nobuyoshi: *See—*
Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hagime; and Suzuki, Sadahide, 4,321,978, Cl. 180-225.000.

Kurakake, Mitsuo, to Fujitsu Fanuc Ltd. Bus connection system. 4,322,794, Cl. 364-200.000.

Kurasawa, Jiro, to Showa Line Ltd. Diesel engine fuel system. 4,321,905, Cl. 123-575.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,322,408, Cl. 424-180.000.
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,322,409, Cl. 424-180.000.

Kuroda, Yoshio: *See—*
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,322,341, Cl. 260-112.50R.

Kuroyama, Toshinobu; and Ohta, Hisatoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Passive seatbelt system. 4,321,979, Cl. 180-268.000.

Kusaka, Satoshi, to Sony Corporation. Arm driving device in linear tracking pickup apparatus. 4,322,840, Cl. 369-220.000.

Kuster, Karl H., to Gte Automatic Electric Labs Inc. Switching regulated pulse width modulated push-pull converter. 4,322,817, Cl. 363-26.000.

Kuster, Werner, to Ciba-Geigy Corporation. Tertiary-alkylamine salts of azine dyestuffs. 4,322,529, Cl. 544-343.000.

Kusters, Norbert L.: *See—*
Moore, William J. M.; and Kusters, Norbert L., 4,322,679, Cl. 324-62.000.

Kuwabara, Kazumi: *See—*
Ohta, Shigeo; Suzuki, Takeo; and Kuwabara, Kazumi, 4,322,856, Cl. 455-189.000.

Kuwakado, Satosi: *See—*
Tanaka, Katsuyuki; Kuwakado, Satosi; Tsuge, Noboru; and Shimogawa, Toshiaki, 4,322,046, Cl. 242-107.40A.

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Nakahara, Yoshihiko; Tsujii, Norihiro; Nakanishi, Kenichi; Sakai, Yuji; and Saigo, Masanori, 4,321,816, Cl. 72-267.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Takayama, Kenichiro; Adachi, Tetsuo; Kohata, Mamoru; Hattori, Kiyoji; and Tomiyama, Tomoko, 4,322,498, Cl. 435-255.000.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See—*
Hirata, Tadashi; Sato, Akira; and Nakamizo, Nobuhiro, 4,322,345, Cl. 260-239.00A.

Kyung Hwan Cheong: *See—*
Song, Ki W., 4,322,582, Cl. 179-90.00R.

Laboratoires OM Societe Anonyme: *See—*
Schulthess, Adrian; and Farine, Jean-Claude, 4,322,405, Cl. 424-93.000.

Lach, Dietrich: *See—*
Hahn, Erwin; Lach, Dietrich; and Streicher, Rolf, 4,322,210, Cl. 8-94.180.

Ladenhauf, Wilhelm: *See—*
Krausse, Jurgen; and Ladenhauf, Wilhelm, 4,322,452, Cl. 427-82.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Kostelitz, Michel, 4,322,255, Cl. 148-16.500.

Lajet Energy Company: *See—*
Johnson, Alfred L., Jr., 4,322,176, Cl. 403-219.000.

Lambert, Lloyd J., Jr.; and Lambert, Lloyd J., Sr. Standing vertical leg curl. 4,322,071, Cl. 272-118.000.

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Lambert, Lloyd J., Jr.; and Lambert, Lloyd J., Sr., 4,322,071, Cl. 272-118.000.

Lambrechts, Peter F. T.; and Van Der Meeren, Jozef H. R., to "Graanderivaten Raffinaderijen Amylum", in het kort: "G.R. Amylum", Vroeger Glucoseries Reunies Genoemd. Method for preparing a water-containing vinyl acetate polymer dispersion, dispersion thus prepared and protective colloid used thereby. 4,322,322, Cl. 524-734.000.

Lamparsky, Dietmar, to Givaudan Corporation. Novel prenyl 4-caranones. 4,322,318, Cl. 252-522.00R.

Lamphier, Larry N.; and Meyers, Walter A., to Bethlehem Steel Corporation. Open top drain. 4,322,179, Cl. 405-36.000.

Lamusga, Gary R.: *See—*
Wood, William D.; and Lamusga, Gary R., 4,321,784, Cl. 56-17.200.

Land, Edwin H.; Bronstein-Bonte, Irena Y.; and Taylor, Lloyd D., to Polaroid Corporation. Copolymeric mordants and photographic products and processes utilizing same. 4,322,489, Cl. 430-213.000.

Landgraf, Robert A., to Emerson Electric Co. Two speed single phase motor. 4,322,665, Cl. 318-774.000.

Lang, Tibor: *See—*
Korosi, Jeno; Lang, Tibor; Szekely, Jozsef; Andrasi, Ferenc; Zolyomi, Gabor; Borsi, Jozsef; Goldschmidt nee Horvath, Katalin; Hamori, Tamas; Szabo nee Czibula, Gabriella; Meszaros nee Dunai-Kovacs, Zsuzsanna; and Miglecz, Erzsebet, 4,322,346, Cl. 260-239.0BD.

Langan, Allan W.: *See—*
Schwartz, Edwin L.; and Langan, Allan W., 4,322,122, Cl. 339-147.00P.

Langbein, Adolf: *See—*
Schneider, Claus; Weber, Karl-Heinz; Langbein, Adolf; Bechtel, Wolf D.; and Boke, Karin, 4,322,423, Cl. 424-256.000.

Lange, Arno: *See—*
Baumann, Annegrit; Kiehs, Karl; Hamprecht, Gerhard; Lange, Arno; and Adolphi, Heinrich, 4,322,413, Cl. 424-200.000.

Lange, Le Roy J., to General Instrument Corporation. Self-service wagering system. 4,322,612, Cl. 235-419.000.

Lange, Randall L.: *See—*
Lange, Richard L.; and Lange, Randall L., 4,321,890, Cl. 119-96.000.

Lange, Richard L.; and Lange, Randall L., to Anderson, Mark. Surgical restrainer for animals. 4,321,890, Cl. 119-96.000.

Lange, Ronald E.; and Fisher, Richard J., to Honeywell Information Systems Inc. Cache memory utilizing selective clearing and least recently used updating. 4,322,795, Cl. 364-200.000.

Langlois, Nicole; Langlois, Yves; and Potier, Pierre, to Agence Nationale de Valorisation de la Recherche. Process for the synthesis of leurosine and of its derivatives. 4,322,350, Cl. 260-244.400.

Langlois, Yves: *See—*
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Larsen, Raymond B. Solar energy collector assembly and frame. 4,321,912, Cl. 126-450.000.

Laszczower, Max, to Solco Basel AG. Apparatus for sucking blood out of body cavities. 4,321,921, Cl. 128-276.000.

Latsch, Reinhard, to Robert Bosch GmbH. Internal combustion engine with temperature controlled combustion chamber walls. 4,321,898, Cl. 123-254.000.

Laughlin, William C.: *See—*
Tolley, William K.; and Laughlin, William C., 4,322,390, Cl. 423-27.000.

Laupman, Robert R., to Novanex Automation N.V. Device for protecting an audio amplifier against overload or short-circuit. 4,322,690, Cl. 330-298.000.

Laurel Bank Machine Co., Ltd.: *See—*
Uchida, Isamu; and Uchida, Shinya, 4,322,796, Cl. 364-405.000.

Laurent, Henry: *See—*
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Wiechert, Rudolf, 4,322,349, Cl. 260-239.55R.

Law, Andrew B.: *See—*
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,322,475, Cl. 428-411.000.

Lawrence, Larry D.: *See—*
Sudweeks, Walter B.; and Lawrence, Larry D., 4,322,258, Cl. 149-2.000.

Leach, Bruce E., to Conoco Inc. Magnesium oxide catalyst. 4,322,566, Cl. 568-804.000.

Lean, Eric G.: *See—*
Comerford, Liam D.; Harper, John S.; and Lean, Eric G., 4,322,127, Cl. 350-96.210.

Lear Siegler, Inc.: *See—*
Masser, Lloyd D., 4,322,061, Cl. 267-54.00R.

Lee, Billy R. Pavement patching apparatus. 4,322,178, Cl. 404-83.000.

Lee, Cheng H.; and Henis, Jay M. S., to Monsanto Company. Quaternization process for ion exchange membranes. 4,322,501, Cl. 521-32.000.

Lee, Kyu T.: *See—*
Hermann, Edward C.; Lee, Kyu T.; and Myers, Melvyn J., 4,322,426, Cl. 424-260.000.

Lee, Teh-Hsuang; and Khosla, Rajinder P., to Eastman Kodak Company. Image sensor adaptable for fast frame readout. 4,322,638, Cl. 307-311.000.

Lee, Yong K.; and Domitrowich, Joseph R., to Fairchild Camera & Instrument Corp. Regulated MOS substrate bias voltage generator for a static random access memory. 4,322,675, Cl. 323-277.000.

Lehmann, Gerhard: *See—*
Berghaus, Klaus; Lehmann, Gerhard; Berghof, Hans-Joachim; and Honecker, Hans-Jurgen, 4,322,112, Cl. 297-362.000.

Leigh Flexible Structures Limited: *See—*
Fish, Daniel C. E., 4,321,774, Cl. 52-63.000.

Leighton, Stephen B.; and Boyd, William H., to United States of America, Health and Human Services. Everting tube device with relative advance control. 4,321,915, Cl. 128-4.000.

Lemelson, Jerome H.; and Grund, Christian. Tourniquet. 4,321,929, Cl. 128-630.000.

Lemke, Guido A.: *See—*
Barbour, Donald R.; Lemke, Guido A.; and Magdo, Steven, 4,322,778, Cl. 361-414.000.

Lemke, James U., to Spin Physics, Inc. Magnetic head having a controllable high-permeability tunnel within a low-permeability sleeve. 4,322,763, Cl. 360-115.000.

Lenox, Ronald S., to Armstrong World Industries, Inc. Process for treating polyamide textile materials with trimellitic anhydride compound. 4,322,512, Cl. 525-420.000.

Lenox, Ronald S.: *See—*
Hoyle, Charles E.; and Lenox, Ronald S., 4,322,211, Cl. 8-402.000.

Lesher, George Y.; Page, Donald F.; and Gruett, Monte D. 1H-Indole-2,3-dione derivatives. 4,322,533, Cl. 546-273.000.

Leslie, Stewart T.; Rhodes, Alan; Boroda, Cyril; and Halpern, Alfred, to Euroceltique, S.A. Percutaneous administration of nitroglycerine. 4,322,433, Cl. 424-298.000.

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Edelson, Richard L., 4,321,919, Cl. 128-214.00R.

Lever Brothers Company: *See*—
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,322,308, Cl. 252-107.000.
Lew, Hyok S.; and Chapman, Ronald R. Positive closure disc valve. 4,322,056, Cl. 251-88.000.
Lewis, Clarence A., Jr.; Lewis, James E.; and Lewis, Richard D. Control apparatus for adjusting the position of a workpiece. 4,322,802, Cl. 364-470.000.
Lewis, James E.: *See*—
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Lewis, Robert A., to Chevron Research Company. Deposit control additives and their fuel compositions. 4,322,305, Cl. 252-51.50A.
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., to Rohm and Haas Company. Article having surface coated with paints containing 3-isothiazolones. 4,322,475, Cl. 428-411.000.
Liautaud, James P. Personal electronic listening system with an air and bone transducer mounted on the clothing collar. 4,322,585, Cl. 179-157.000.
Licentia Patent-Verwaltungs G.m.b.H: *See*—
Borchard, Heinz; and Redlich, Horst, 4,322,841, Cl. 369-270.000.
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Bader, Dietrich; and Reiprich, Sieghard, 4,322,653, Cl. 313-55.000.
Schroder, Ernst, 4,322,636, Cl. 307-246.000.
Lickel, Kenneth F.; and Stonebank, Roger, to U.S. Philips Corporation. X-ray tube filament current predicting circuit. 4,322,797, Cl. 364-414.000.
Lieb, Erwin: *See*—
Wiest, Hubert; Weissgerber, Rudolf; and Lieb, Erwin, 4,322,516, Cl. 526-307.700.
Lieske, Edgar: *See*—
Konrad, Gunther; and Lieske, Edgar, 4,322,212, Cl. 8-407.000.
Lillig, John E.; Neeper, Robert K.; and Ashton, Paul J., to Beckman Instruments, Inc. Method and apparatus for positioning cars in a sample handling apparatus. 4,322,216, Cl. 23-230.00R.
Lim, Franklin; and Moss, Richard D., to Damon Corporation. Process for producing controlled porosity microcapsules. 4,322,311, Cl. 252-316.000.
Lincoln, Frank H.: *See*—
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,322,525, Cl. 542-421.000.
Lindblom, Erik I. Guarded locking device. 4,322,102, Cl. 292-281.000.
Lion Corporation: *See*—
Onoda, Takeru; Wada, Keisuke; Kageyama, Hironori; Yamanouchi, Hideki; and Karube, Kenji, 4,322,314, Cl. 252-412.000.
Lion Kabushiki Kaisha: *See*—
Nakahara, Yoshihiko; Tsujii, Norihiro; Nakanishi, Kenichi; Sakai, Yuji; and Saigo, Masanori, 4,321,816, Cl. 72-267.000.
List, Hans: *See*—
Zeiringer, Rudolf, 4,321,833, Cl. 73-730.000.
Little, Keith W.: *See*—
Millar, Barry C.; and Little, Keith W., 4,321,848, Cl. 83-153.000.
Littlehale, Bradner M. Automatic liquid delivery apparatus. 4,321,937, Cl. 137-78.300.
Liu, Benjamin Y. H.: *See*—
Marple, Virgil A.; and Liu, Benjamin Y. H., 4,321,822, Cl. 73-28.000.
Liu, Tin-Yin: *See*—
Chen, Hsien-Jer; Liu, Tin-Yin; Sung, Hsien-Yi; and Su, Jong-Ching, 4,322,344, Cl. 260-123.500.
Llama Gabilonda y. Cia. S.A.: *See*—
Wilhelm, Gary, 4,321,764, Cl. 42-69.00B.
Lockley Services Pty. Ltd.: *See*—
Tomlinson, Roderick P. J., 4,322,466, Cl. 428-199.000.
Logie, Charles F., to American Store Equipment Company. Fitting room mirror bracket. 4,322,053, Cl. 248-488.000.
Logsdon, John S.: *See*—
Hodge, Norman J.; and Logsdon, John S., 4,322,052, Cl. 248-420.000.
Lohrentz, Howard R.: *See*—
Holdeman, Adin F.; Gaeddert, Melvin V.; Ratzlaff, Howard J.; Pruitt, Martin E.; and Lohrentz, Howard R., 4,321,787, Cl. 56-341.000.
Lohse, Georg: *See*—
Bohme, Hermann; and Lohse, Georg, 4,322,779, Cl. 362-17.000.
Lohstroh, Jan; and Hart, Cornelis M., to U.S. Philips Corporation. Memory cell for a static memory and static memory comprising such a cell. 4,322,821, Cl. 365-155.000.
Loid, Hans P.: *See*—
Resjo, Per-Arne; and Loid, Hans P., 4,322,826, Cl. 367-96.000.
Lonardi, Emile: *See*—
Mahr, Rene; Radoux, Henri; Mailliet, Pierre; and Lonardi, Emile, 4,322,197, Cl. 414-206.000.
Long, Florren E., to Ludlow Corporation. Laminate with heat-sealable polyester foil and package. 4,322,003, Cl. 206-525.000.
Lopata, Ira, to Ragen Precision Industries, Inc. Electrostatic display apparatus. 4,322,155, Cl. 355-3.00R.
Lord, Arthur V.; Hacking, Kenneth; and Drewery, John O., to British Broadcasting Corporation. Television display system. 4,322,750, Cl. 358-140.000.
Lord Corporation: *See*—
Zalucha, Denis J., 4,322,509, Cl. 525-287.000.
Losel, Walter; Esser, Franz; Roos, Otto; Reichl, Richard; Kuhn, Franz J.; and Traunecker, Werner, to C. H. Boehringer Sohn. Substituted 1-(α-aminocarbonyl-benzyl)-3,4-dihydro-isoquinolines, compositions and use. 4,322,418, Cl. 424-248.570.
Loughney, Charles E. Ski mountaineering binding. 4,322,090, Cl. 280-614.000.
Lowdermilk, Charles H. Dispensing device. 4,322,017, Cl. 222-43.000.
Lowey, James F.: *See*—
Kaspar, Mark L.; and Lowey, James F., 4,322,472, Cl. 428-350.000.
Lowrance Electronics, Inc.: *See*—
Weber, Ronald G., 4,322,827, Cl. 367-99.000.
Lubrizol Corporation, The: *See*—
Forsberg, John W., 4,322,478, Cl. 428-471.000.
Forsberg, John W., 4,322,479, Cl. 428-471.000.
Lucas, George A., to Goodyear Aerospace Corporation. Seal splice. 4,322,462, Cl. 428-61.000.
Lucas Industries Limited: *See*—
Thistleton, John S., 4,321,986, Cl. 188-196.00F.
Lucitron, Inc.: *See*—
De Jule, Michael; Sobel, Alan; Meyer, Ralph L.; and Glaser, David, 4,322,659, Cl. 315-169.100.
Lucke, Helmut: *See*—
Heinemann, Otto; Lucke, Helmut; Schobler, Werner; Heiringhoff, Burkhard; and Krumme, Helmut, 4,322,116, Cl. 308-9.000.
Luderer, Manfred, to Ernst Mueller GmbH & Co. Electrostatic paint spray pistol with a rotating bell shaped atomizer. 4,322,038, Cl. 239-700.000.
Ludlow Corporation: *See*—
Long, Florren E., 4,322,003, Cl. 206-525.000.
Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S., deceased (by Makowski, Patricia H., executrix); and Klein, Robert R., to Exxon Research & Engineering Co. Process for controlled gelation of polymeric solution (C-971). 4,322,329, Cl. 524-389.000.
Luptak, Erno: *See*—
Vadas, Zoltan; Belcsak, Zoltan; Luptak, Erno; Palfalvi, Gyorgy; Vasvari, Vilmos; and Wenzel, Bela, 4,321,790, Cl. 60-39.020.
Luttmann, Alwin; Plaas-Link, Andreas; and Muckenhoff, Klaus. Module for analyzing and linearizing of electrical signals from unknown systems and method for using it. 4,322,681, Cl. 324-77.00D.
Lynch, Annette R. Pacifier for newborns. 4,321,927, Cl. 128-360.000.
Lyon, Thomas H.: *See*—
Bow, Kenneth E.; and Lyon, Thomas H., 4,322,574, Cl. 174-107.000.
Maa, Peter S.; and Veluswamy, Lavanga R., to Exxon Research & Engineering Co. Coal conversion in the presence of added hydrogen sulfide. 4,322,283, Cl. 208-8.00R.
Mabuchi Motor Co. Ltd.: *See*—
Mabuchi, Takaichi, 4,322,650, Cl. 310-220.000.
Mabuchi, Takaichi, to Mabuchi Motor Co. Ltd. Small electric motor. 4,322,650, Cl. 310-220.000.
Mace, Leon P.: *See*—
Chumley, Calvin L.; Hendrickson, William W.; and Mace, Leon P., 4,322,588, Cl. 200-5.00A.
Machi, Sueo: *See*—
Matsuda, Osamu; Watanabe, Terutaka; Tabata, Yoneho; and Machi, Sueo, 4,322,511, Cl. 525-344.000.
Machleder, Warren H.; and Bollinger, Joseph M., to Rohm and Haas Company. Multipurpose hydrocarbon fuel and lubricating oil additive. 4,322,220, Cl. 44-75.000.
Machurat, Jean; Morawski, Jean-Claude; and Soula, Gerard, to Rhone-Poulenc Industries. Compatibly filled/plasticized polymeric compositions. 4,322,336, Cl. 524-104.000.
Macrander, Max S.: *See*—
Khan, Ashfaq R.; Macrander, Max S.; and Krylow, Konstanty E., 4,322,580, Cl. 179-18.0EE.
Madsen, Erik H. Dental cleaning slurry. 4,322,207, Cl. 433-216.000.
Maeda, Keijiro, to Sony Corporation. Voice coil bobbin connection to loudspeaker diaphragm of honeycomb core sandwiched by sheets. 4,322,583, Cl. 179-115.5VC.
Maeda, Kouji; and Goda, Tadahiro, to Mitsubishi Denki Kabushiki Kaisha. Multi-terminal protective relay system. 4,322,768, Cl. 361-64.000.
Maehara, Toshifumi, to Akebono Brake Industry Co., Ltd. Hydraulic pressure control device for double hydraulic piping for vehicle brakes. 4,322,114, Cl. 303-6.00C.
Magdo, Steven: *See*—
Barbour, Donald R.; Lemke, Guido A.; and Magdo, Steven, 4,322,778, Cl. 361-414.000.
Maggioni, Paolo: *See*—
Minisci, Francesco; Maggioni, Paolo; and Citterio, Attilio, 4,322,547, Cl. 560-204.000.
Mahr, Rene; Radoux, Henri; Mailliet, Pierre; and Lonardi, Emile, to Paul Wurth, S.A. Process and installation for charging a shaft furnace. 4,322,197, Cl. 414-206.000.
Maida, Osamu, to Nippon Kogaku K.K. Electric driving device of a camera. 4,322,149, Cl. 354-173.000.
Maier, Horst R.: *See*—
Forster, Siegfried; Krauth, Axel; Maier, Horst R.; and Pohlmann, Hans J., 4,321,964, Cl. 165-165.000.
Maier, Ludwig; and Durr, Dieter, to Ciba-Geigy Corporation. 2-Substituted 5-phenoxyphenylphosphonic acid derivatives. 4,322,375, Cl. 260-951.000.
Mailander, Manfred, to Balda-Werke. Electronic flash for a camera. 4,322,143, Cl. 354-32.000.
Mailliet, Pierre: *See*—
Mahr, Rene; Radoux, Henri; Mailliet, Pierre; and Lonardi, Emile, 4,322,197, Cl. 414-206.000.

Makhijani, Manik P., to International Business Machines Corp. Apparatus and method for rework dressing of a chip site. 4,321,738, Cl. 29-76.00R.

Maki, Takeshi: *See—*
Kudo, Bosshi; Matsuo, Kazuyoshi; Maki, Takeshi; and Yoshioka, Masamichi, 4,322,263, Cl. 156-617.00H.

Makowski, Henry S., deceased: *See—*
Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S., deceased; and Klein, Robert R., 4,322,329, Cl. 524-389.000.

Makowski, Patricia H., executrix: *See—*
Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S., deceased; and Klein, Robert R., 4,322,329, Cl. 524-389.000.

Malchow, Max E., to RCA Corporation. Circuitry for generating electric signals with proportional, opposite-sense rates of change. 4,322,691, Cl. 330-301.000.

Mallette, Rodney C., to AMF Incorporated. Bowling pin base. 4,322,078, Cl. 273-82.00B.

Mallinckrodt, Inc.: *See—*
Dikeman, Roxane N., 4,322,217, Cl. 23-230.00B.

Maloney-Crawford Corporation: *See—*
Wood, Harold S., 4,322,265, Cl. 159-47.00R.

Maluta, James; Wasson, John H.; and Koch, Robert J., to Airco, Inc. Isolation incubator. 4,321,913, Cl. 128-1.00B.

Mammach, Peter: *See—*
Huber, Wilhelm; Mammach, Peter; and Weingand, Kaspar, 4,322,656, Cl. 313-485.000.

Manabe, Osamu; Utsunomiya, Masayasu; Kamiyama, Morihiro; Tsutsui, Michiaki; and Matsumoto, Masayuki, to Asahi Chemical Company Limited. Dyeing method. 4,322,214, Cl. 8-582.000.

Manhardt, John R.: *See—*
Kuehnle, Manfred R.; Manhardt, John R.; and Wright, Malor, 4,322,488, Cl. 430-103.000.

Mannesmann Rexroth GmbH: *See—*
Hunschede, Karlheinz; and Krebs, Helmut, 4,321,941, Cl. 137-116.300.

Mano, Hiroshi, to Sumitomo Electric Industries, Ltd. Vascular prosthesis. 4,321,711, Cl. 3-1.400.

Manzke, Klaus; and Brotzler, Roland, to BASF Aktiengesellschaft. Device for positioning objects of low mass. 4,322,762, Cl. 360-106.000.

Mares, Frank: *See—*
Tovrog, Benjamin S.; Diamond, S. Elliot; and Mares, Frank, 4,322,562, Cl. 568-401.000.

Markl, Erich: *See—*
Hafner, Walter; Markl, Erich; Eibel, Ludwig; Kreis, Gerhard; Samrowski, Dietrich; Wick, Manfred; Deubzer, Bernward; and Friedrich, Wilhelm, 4,322,473, Cl. 428-391.000.

Marple, Virgil A.; and Liu, Benjamin Y. H., to University of Minnesota, The Regents of the. Impactor apparatus. 4,321,822, Cl. 73-28.000.

Marschak, Howard J. Display unit mounting means. 4,322,006, Cl. 211-88.000.

Marsh, Douglas G.: *See—*
Dwarakanath, Mirmira R.; and Marsh, Douglas G., 4,322,687, Cl. 330-9.000.

Marsteller & Killmann KG: *See—*
Bertram, Hans; and Ramesohl, Leo, 4,322,076, Cl. 273-73.00D.

Martek Products, Inc.: *See—*
Morgan, Curtis, 4,322,714, Cl. 340-65.000.

Martens, Jurgen: *See—*
Kleemann, Axel; Martens, Jurgen; and Weigel, Horst, 4,322,552, Cl. 564-198.000.

Martin, Alan. Hand tool for setting threaded fasteners. 4,321,814, Cl. 72-114.000.

Martin, Harlan W.; Burkholder, Harvey Z.; Voran, Willis R.; and Winters, Galen A., to Favorite Manufacturing, Inc. High-density poultry cage system and manure handling method. 4,321,887, Cl. 119-22.000.

Martin, John G., to RCA Corporation. Susceptor for heating semiconductor substrates. 4,322,592, Cl. 219-10.49R.

Martin, Joseph H.: *See—*
Hammons, Carl A.; and Martin, Joseph H., 4,322,376, Cl. 261-44.00A.

Martin, Niles J.: *See—*
Jackson, Leigh F.; and Martin, Niles J., 4,322,703, Cl. 335-205.000.

Martin, Patrick H., to Dow Chemical Company, The. Process for coating substrates with high molecular weight epoxy resins. 4,322,456, Cl. 427-195.000.

Martin, Pierre; Greuter, Hans; Steiner, Eginhard; and Bellus, Daniel, to Ciba-Geigy Corporation. 2,4,4,4-Tetrahalobutanoic acid halide. 4,322,374, Cl. 260-544.00Y.

Martin, Robert, to Alex Friedmann Kommanditgesellschaft. Apparatus for measuring the flow velocity of a fluid. 4,321,835, Cl. 73-861.280.

Martin, Robert C., to United States of America, Army. High energy laser target board. 4,321,824, Cl. 73-190.0EW.

Martin, William A.; and Harper, Harold H., to General Motors Corporation. Method and apparatus for assembling heat exchangers. 4,321,739, Cl. 29-157.30A.

Martinelli, Rene J. Belt attachment for tire chains. 4,321,956, Cl. 152-222.000.

Martinez, Louis, to Altran Electronics. Broadcast system for distribution automation and remote metering. 4,322,842, Cl. 370-11.000.

Martinez, Salvator. Dough extruder and sheet spreader apparatus. 4,322,202, Cl. 425-208.000.

Marx, Michael: *See—*
Weinhardt, Klaus; and Marx, Michael, 4,322,421, Cl. 424-251.000.

Maryschka, Gerhard: *See—*
Beitler, Franz; Maryschka, Gerhard; and Shuster, Heinrich, 4,322,761, Cl. 360-85.000.

Marz, Horst F., to C-I-L Inc. Gland seal for stuffer horn. 4,321,728, Cl. 17-41.000.

Maschinenfabrik Korfmann GmbH: *See—*
Koppe, Uwe; Stegmanns, Walter; and Weisner, Horst, 4,321,967, Cl. 166-250.000.

Masini, Martino. Method and apparatus for opening the latch of the needles in double-cylinder knitting machines. 4,321,806, Cl. 66-14.000.

Mason, Kenneth, to Kenneth Mason Holdings Limited. Systems for processing printed data. 4,322,754, Cl. 358-296.000.

Masselin, Paul H.; and Wieland, Karl H., to Philip Morris Incorporated. Article transfer apparatus. 4,322,067, Cl. 271-99.000.

Masser, Lloyd D., to Lear Siegler, Inc. Tandem spring suspension with leaf rotation stop. 4,322,061, Cl. 267-54.00R.

Masuda, Kunio: *See—*
Hilzendeger, Joseph J.; and Masuda, Kunio, 4,322,231, Cl. 55-357.000.

Masutomi, Hiroshi; and Izutsu, Minoru, to Babcock-Hitachi Kabushiki Kaisha. Catalytic apparatus. 4,322,386, Cl. 422-171.000.

Matsuda, Motonobu: *See—*
Tominaga, Shinji; and Matsuda, Motonobu, 4,322,141, Cl. 354-25.000.

Matsuda, Osamu; Watanabe, Terutaka; Tabata, Yoneho; and Machi, Sueo, to Japan Atomic Energy Research Institute. Process of hydrolyzing fluorine-containing multi-component copolymers. 4,322,511, Cl. 525-344.000.

Matsui, Takeshi: *See—*
Kohama, Tokio; Matsui, Takeshi; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,322,799, Cl. 364-431.060.

Matsumoto, Fuyuhiko: *See—*
Ebi, Yutaka; Ohori, Tamio; Matsumoto, Fuyuhiko; and Tomita, Satoru, 4,322,734, Cl. 346-153.100.

Matsumoto, Kaname: *See—*
Takai, Souichi; Watanabe, Yukinori; and Matsumoto, Kaname, 4,321,714, Cl. 4-310.000.

Matsumoto, Ken; and Ho, Peter P. K., to Eli Lilly and Company. 2(4-Fluorophenyl)-4,5,-bis(4-methoxyphenyl)thiazole and method of use. 4,322,428, Cl. 424-270.000.

Matsumoto, Masayuki: *See—*
Manabe, Osamu; Utsunomiya, Masayasu; Kamiyama, Morihiro; Tsutsui, Michiaki; and Matsumoto, Masayuki, 4,322,214, Cl. 8-582.000.

Matsunaga, Fujihisa; Ohno, Norio; and Nambu, Hirohiko, to Mitsui Petrochemical Industries Ltd. Process for production of aromatic alcohols. 4,322,567, Cl. 568-815.000.

Matsunaga, Kenichi: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,322,408, Cl. 424-180.000.
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,322,409, Cl. 424-180.000.

Matsuo, Kazuyoshi: *See—*
Kudo, Bosshi; Matsuo, Kazuyoshi; Maki, Takeshi; and Yoshioka, Masamichi, 4,322,263, Cl. 156-617.00H.

Matsushita Electric Industrial Company, Limited: *See—*
Yamashita, Tadaoki; Ohta, Takeo; Akahira, Nobuo; Nakamura, Tatsushi; and Takenaga, Mutsuo, 4,322,839, Cl. 369-122.000.

Matsuura, Kazuo: *See—*
Miyoshi, Mituji; Matsuura, Kazuo; and Tajima, Yoshio, 4,322,514, Cl. 526-124.000.

Matsuura, Takeshi; Blais, Pierre; Baxter, Arthur G.; and Sourirajan, Srinivasa, to Canadian Patents & Dev. Ltd. Method of concentrating natural fruit juices by reverse osmosis. 4,322,448, Cl. 426-490.000.

Matsuura, Takeshi; and Watatani, Seiji, to Hitachi Maxell, Ltd. Magnetic recording medium. 4,322,474, Cl. 428-411.000.

Mattel, Inc.: *See—*
James, David F.; Oliphant, Peter A.; and Effler, Timothy A., 4,322,074, Cl. 273-1.00E.

Matthews, Edward H., Jr.; and White, William A., Jr., to Iowa State University Research Foundation, Inc. Door guard. 4,322,104, Cl. 292-288.000.

Mattor, John A.: *See—*
Gray, Lorin S., III; Mattor, John A.; Millard, Ben; and Ward, Franklin J., 4,322,450, Cl. 427-44.000.

Maurer, Spencer B. Rotary impact clutch. 4,321,973, Cl. 173-93.500.

Max Planck Gesellschaft: *See—*
Claussen, Nils; Jahn, Jurgen; and Petzow, Gunter, 4,322,249, Cl. 501-88.000.

McCall, Frank B.: *See—*
Carson, Richard G.; McCall, Frank B.; and Stanley, Alistair J., 4,322,710, Cl. 338-61.000.

McCann, Dennis L.: *See—*
Hartung, Rodney L.; McCann, Dennis L.; Uhre, Larry W.; Bergmann, Richard P.; Hostetter, James A.; and Konrad, Nicholas J., 4,322,168, Cl. 366-15.000.

McClellan, William R.: *See—*
Bither, Tom A., Jr.; and McClellan, William R., 4,322,358, Cl. 260-346.110.

McCoin, Dan K., to Bales-McCoin Research, Inc. Traction pressure control system. 4,322,798, Cl. 364-424.000.

McCrumb, Walter C.: *See*—
Howard, Guy J.; Hubbard, James H.; McCrumb, Walter C.; and Spivey, Paul R., 4,322,813, Cl. 364-900.000.

McCullough, Harold E.: *See*—
Everhart, Billy M.; and McCullough, Harold E., 4,322,700, Cl. 335-128.000.

McGeehin, Peter: *See*—
Harrison, Keith T.; McGeehin, Peter; and Hooper, Alan, 4,322,485, Cl. 429-193.000.

McGourty, Thomas K. Metric-english measurement comparator device. 4,322,608, Cl. 235-85.00R.

McHenry, Kelly D.; Smeby, Jane M.; and Michelson, Robert H., to Honeywell Inc. Process for the production of aluminum nitride needles. 4,322,395, Cl. 423-412.000.

McIlvried, Howard G., III: *See*—
Tsai, Shirley C.; and McIlvried, Howard G., III, 4,322,284, Cl. 208-10.000.

McIntyre, Jack. Gunsmith's tool. 4,321,737, Cl. 29-1.100.

McKee, Douglas C. Eyelid retractor. 4,321,916, Cl. 128-20.000.

McKee, William R.: *See*—
Kilby, Jack S.; McKee, William R.; and Porter, Wilbur A., 4,322,379, Cl. 264-13.000.

McKelvie, James; and Walker, Colin A., to National Research Development Corporation. Method and apparatus for sensing in-plane deformation of a surface. 4,322,162, Cl. 356-35.500.

McLennan, Lyall A.; Ganjo, John W.; and Pomarolli, Tom, to McLennan, Lyall A. Abutment swivel doorstop. 4,322,100, Cl. 292-67.000.

McNinney, Richard P.: *See*—
Thompson, Robert E.; and McNinney, Richard P., 4,322,058, Cl. 251-145.000.

McPherson, Roger K. High density VMOS electrically programmable ROM. 4,322,822, Cl. 365-182.000.

McPherson, William L. Convertible vehicle. 4,322,108, Cl. 296-164.000.

Meckel, Benjamin B.: *See*—
Meckel, Nathan K.; and Meckel, Benjamin B., 4,322,276, Cl. 204-192.00P.

Meckel, Nathan K.; and Meckel, Benjamin B., to Deposition Technology, Inc. Method for producing an inhomogeneous film for selective reflection/transmission of solar radiation. 4,322,276, Cl. 204-192.00P.

Meier, Paul, to Bachofen & Meier. Nozzle structure for moistening or impregnating a web. 4,321,760, Cl. 34-155.000.

Mein, Gordon F.; and Terry, John B., to Northern Telecom Limited. Transformerless line interface circuit. 4,322,586, Cl. 179-170.0NC.

Meinco Mfg. Co.: *See*—
Meinzer, Lester N., 4,321,989, Cl. 188-377.000.

Meinert, Leo L.: *See*—
Rymarchyk, Nicholas M.; and Meinert, Leo L., 4,322,033, Cl. 239-132.300.

Meinzer, Lester N., to Meinco Mfg. Co. Energy absorbing impact barrier. 4,321,989, Cl. 188-377.000.

Mellinger, Gerald A.: *See*—
Mikus, William S.; Cozza, Anthony J.; Collins, Harold E., II; and Mellinger, Gerald A., 4,321,876, Cl. 110-171.000.

Menezes, William A.; and Kuper, Douglas D., to Sony Corporation. Error detection for use in editing apparatus. 4,322,814, Cl. 364-900.000.

Menth, Anton; Nagel, Hartmut; and Spinner, Ulrich, to BBC, Brown, Boveri & Company, Limited. Permanent-magnet alloy. 4,322,257, Cl. 148-101.000.

Mercier, Jacques H., to Normand Trust, The. Pressure vessel. 4,321,949, Cl. 138-30.000.

Merck & Co., Inc.: *See*—
Hoffman, William F., 4,322,563, Cl. 568-425.000.

Mere, Malleray & Cie: *See*—
Courier de Mere, Henri, 4,322,789, Cl. 363-133.000.

Merger, Franz; and Towae, Friedrich, to BASF Aktiengesellschaft. Preparation of isocyanates. 4,322,365, Cl. 260-453.00P.

Merkel, Kurt E.: *See*—
Debono, Manuel; Merkel, Kurt E.; Weeks, Robert E.; and Cole, Herald J., 4,322,406, Cl. 424-118.000.

Merrell Dow Pharmaceuticals Inc.: *See*—
Metcalf, Brian W.; and Johnston, J. O'Neal, 4,322,416, Cl. 424-242.000.

Merrill, Stewart H.; Stahly, Frederick A.; Turnblom, Ernest W.; Wright, Beth G.; and Wright, Hal E., to Eastman Kodak Company. Composite electrically photosensitive particles for electrophoretic migration imaging process. 4,322,487, Cl. 430-37.000.

Merritt, Ingrid: *See*—
Ziegler, Kurt, 4,321,811, Cl. 70-356.000.

Merz, Ekkehard; and Kothe, Gerhard, to Wacker-Chemie GmbH. Adhesive for floor coverings, process of its production and its application. 4,322,330, Cl. 523-221.000.

Merz, Kenneth M.: *See*—
Wahlers, Richard L.; and Merz, Kenneth M., 4,322,477, Cl. 428-432.000.

Messer Griesheim GmbH: *See*—
Kimm, Dieter, 4,322,059, Cl. 266-75.000.

Meszaros nee Dunai-Kovacs, Zsuzsanna: *See*—
Korosi, Jeno; Lang, Tibor; Szekely, Jozsef; Andrasi, Ferenc; Zolyomi, Gabor; Borsi, Jozsef; Goldschmidt nee Horvath, Katalin; Hamori, Tamas; Szabo nee Czibula, Gabriella; Meszaros nee Dunai-Kovacs, Zsuzsanna; and Miglecz, Erzsebet, 4,322,346, Cl. 260-239.0BD.

Metcalf, Brian W.; and Johnston, J. O'Neal, to Merrell Dow Pharmaceuticals Inc. 10-Alkynyl steroids. 4,322,416, Cl. 424-242.000.

Metz, Arthur J.: *See*—
Schlotzhauer, Kenneth G.; and Metz, Arthur J., 4,322,688, Cl. 330-252.000.

Meyer, Dieter: *See*—
Hahn, Friedrich W.; and Meyer, Dieter, 4,321,957, Cl. 152-362.00R.

Meyer, Gunther: *See*—
Herrmann, Hans-Joachim; Meyer, Gunther; and Steffen, Klaus-Dieter, 4,322,554, Cl. 564-273.000.

Meyer, Ralph L.: *See*—
De Jule, Michael; Sobel, Alan; Meyer, Ralph L.; and Glaser, David, 4,322,659, Cl. 315-169.100.

Meyers, Walter A.: *See*—
Lamphier, Larry N.; and Meyers, Walter A., 4,322,179, Cl. 405-36.000.

Mezera, John R.; Dimitrios, James T.; and Phillips, Graham R., to Gould Inc. Electrical power generating system. 4,322,630, Cl. 290-40.00C.

Mezey, Eugene J.; and Dinovo, Salvatore T., to Battelle Memorial Institute. Adsorbent regeneration and gas separation utilizing microwave heating. 4,322,394, Cl. 423-244.000.

Michaelsen, Marcus H.; and Dorn, Norman E. Livestock loading device. 4,321,889, Cl. 119-82.000.

Michelson, Robert H.: *See*—
McHenry, Kelly D.; Smeby, Jane M.; and Michelson, Robert H., 4,322,395, Cl. 423-412.000.

Mickleson, Lee; and Olson, Eric V., to Discovision Associates. Dithered center tracking system. 4,322,837, Cl. 369-44.000.

Micro Display Systems, Inc.: *See*—
Husted, Jack E., 4,322,833, Cl. 368-69.000.

Micron Corporation: *See*—
Frias, Ronald J.; Gross, Roger A.; and Jagielski, David, 4,322,158, Cl. 355-27.000.

Midland-Ross Corporation: *See*—
Hemsath, Klaus H., 4,321,961, Cl. 165-8.000.
Schmidt, H. Dean; and Eckstrom, Peter M., 4,321,877, Cl. 110-186.000.

Miglecz, Erzsebet: *See*—
Korosi, Jeno; Lang, Tibor; Szekely, Jozsef; Andrasi, Ferenc; Zolyomi, Gabor; Borsi, Jozsef; Goldschmidt nee Horvath, Katalin; Hamori, Tamas; Szabo nee Czibula, Gabriella; Meszaros nee Dunai-Kovacs, Zsuzsanna; and Miglecz, Erzsebet, 4,322,346, Cl. 260-239.0BD.

Mihalcik, Thomas J.: *See*—
Grimes, Steven D.; and Mihalcik, Thomas J., 4,321,828, Cl. 73-351.000.

Mikus, William S.; Cozza, Anthony J.; Collins, Harold E., II; and Mellinger, Gerald A., to Combustion Engineering, Inc. System for the removal of ash. 4,321,876, Cl. 110-171.000.

Millar, Barry C.; and Little, Keith W., to Bundy Corporation. Cylindrical member processing apparatus. 4,321,848, Cl. 83-153.000.

Millard, Ben: *See*—
Gray, Lorin S., III; Mattor, John A.; Millard, Ben; and Ward, Franklin J., 4,322,450, Cl. 427-44.000.

Miller, Alan H. Receptacle for moisture-exuding food products. 4,321,997, Cl. 206-204.000.

Miller Electric Manufacturing Company: *See*—
Grist, Franklin J., 4,322,602, Cl. 219-130.330.

Miller, George A.: *See*—
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,322,475, Cl. 428-411.000.

Miller, Jean C.; and Gerzon, Koert, to Eli Lilly and Company. Antineoplastic 4'-formylamino and 4'-acetylamino VLB, and derivatives thereof. 4,322,351, Cl. 424-262.000.

Miller, Robert J., to International Business Machines Corporation. Conductivity WSi_2 (tungsten silicide) films by Pt preanneal layering. 4,322,453, Cl. 427-89.000.

Miller, William J., to Racal-Milgo, Inc. Message format for secure communication over data links. 4,322,576, Cl. 178-22.070.

Miloscia, William J.; Turnbaugh, John A.; and Giddings, Brandford E., to Standard Oil Company, The. Nitrile barrier resins and process for their manufacture. 4,322,510, Cl. 525-310.000.

Minamizono, Junji; Kawashima, Yoshiro; Ishimaru, Shingo; and Inoue, Noriyuki, to Fuji Photo Film Co., Ltd. Photographic light-sensitive material. 4,322,494, Cl. 430-599.000.

Minarczyk, Michael M., to General Electric Company. High intensity discharge lamp containing electronic starting aid. 4,322,658, Cl. 315-47.000.

Minart, Francois, to Essilor International Cie Generale d'Optique. Support member for glasses frame, specially for use under helmet. 4,322,138, Cl. 351-155.000.

Minisci, Francesco; Maggioni, Paolo; and Citterio, Attilio, to Brichima S.p.A. Process for producing difunctional aliphatic organic compounds. 4,322,547, Cl. 560-204.000.

Minkenberg, Hubert: *See*—
Schwab, Max; Heinen, Peter; Diederichs, Willi; Gossens, Peter; Ohloff, Fritz-Gunter; and Minkenberg, Hubert, 4,321,843, Cl. 76-107.00A.

Minnesota Mining and Manufacturing Company: *See*—
Engel, Michael R.; and Stiller, Jill P., 4,322,441, Cl. 424-331.000.
Kato, Kenneth H., 4,322,495, Cl. 435-7.000.
Wright, Benjamin K., 4,322,677, Cl. 324-52.000.

Minolta Camera Kabushiki Kaisha: *See*—
Kawamura, Kunio; and Ueda, Hiroshi, 4,322,142, Cl. 354-25.000.
Tominaga, Shinji; and Matsuda, Motonobu, 4,322,141, Cl. 354-25.000.

Minowa, Junichiro; Fujii, Yohji; Aoyama, Tsutomu; and Doi, Kikuo, to Nippon Electric Co., Ltd.; and Nippon Telegraph & Telephone Public Corp. Mechanical optical switching devices. 4,322,126, Cl. 350-96.200.

Mita Industrial Company Limited: *See*—
Miyakawa, Nobuhiro, 4,322,471, Cl. 428-341.000.

Mita, Tetsuo; Tani, Nobutaka; Nakanishi, Hirokazu; Takase, Junji; and Isayama, Katsuhiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Curable composition. 4,322,272, Cl. 204-159.130.

Mitchell, Charles S., to Konishiroku Photo Industry Co., Ltd. Sheet sorting apparatus. 4,322,069, Cl. 271-296.000.

Mitsubishi Chemical Ind.: *See*—
Onoda, Takeru; Wada, Keisuke; Kageyama, Hironori; Yamanouchi, Hideki; and Karube, Kenji, 4,322,314, Cl. 252-412.000.

Mitsubishi Chemical Industries Limited: *See*—
Tsunoda, Yoshitoshi; Tomita, Shimpei; and Miyazawa, Chihiro, 4,322,564, Cl. 568-454.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Maeda, Kouji; and Goda, Tadahiro, 4,322,768, Cl. 361-64.000.
Onishi, Ken; Ozaki, Minoru; and Tanaka, Kunimaro, 4,322,756, Cl. 360-13.000.
Yoshida, Masayuki, 4,322,712, Cl. 340-19.00R.

Mitsubishi Petrochemical Co., Ltd.: *See*—
Yoshimura, Naoki; Hijikata, Kenji; and Hosokawa, Noritaka, 4,322,327, Cl. 524-507.000.

Mitsui Petrochemical Industries Ltd.: *See*—
Matsunaga, Fujihisa; Ohno, Norio; and Nambu, Hirohiko, 4,322,567, Cl. 568-815.000.

Mitzlaff, Michael: *See*—
Jensen, Harald; Schmidt, Erwin; Mitzlaff, Michael; Cramer, Jurgen; Pistorius, Rudolf; Pietsch, Hartmut; and Dehmer, Klaus, 4,322,271, Cl. 204-73.00R.

Miura, Shinji; and Aramaki, Kazuo, to Ricoh Co., Ltd. Copying machine. 4,322,157, Cl. 355-14.00C.

Miyakawa, Nobuhiro, to Mita Industrial Company Limited. Heat-sensitive recording element. 4,322,471, Cl. 428-341.000.

Miyakoshi, Shinichi; and Yamamoto, Kazuhiro, to Honda Giken Kogyo Kabushiki Kaisha. Rear wheel suspension for a motorcycle. 4,322,088, Cl. 280-284.000.

Miyazawa, Chihiro: *See*—
Tsunoda, Yoshitoshi; Tomita, Shimpei; and Miyazawa, Chihiro, 4,322,564, Cl. 568-454.000.

Miyoshi, Mituji; Matsuura, Kazuo; and Tajima, Yoshio, to Nippon Oil Company, Limited. Process for preparing a copolymer. 4,322,514, Cl. 526-124.000.

Mizrach, Amos: *See*—
Zaltzman, Arthur; Mizrach, Amos; and Schmilovitz, Zeev, 4,322,287, Cl. 209-44.000.

Mizuguchi, Ryuzo; Ishikura, Shin-ichi; and Ishii, Keizo, to Nippon Paint Co., Ltd. Ampho-ionic group-containing alkyd resins. 4,322,324, Cl. 528-290.000.

Mobil Oil Corporation: *See*—
Kettner, Roland, 4,322,307, Cl. 252-8.55B.

Mock, Donald E., to Cetec Corporation. Mist eliminator and wet deck pack. 4,322,234, Cl. 55-440.000.

Moeller, Romane G. Adjustable animal collar. 4,321,891, Cl. 119-106.000.

Mogi, Takao; Murakami, Shigetoshi; Okada, Hisao; and Ishigaki, Yoshio, to Sony Corporation. Remote control apparatus. 4,322,855, Cl. 455-151.000.

Mohr, Edward L. Stripper's table and method of compositing lithographic work pieces. 4,322,161, Cl. 355-93.000.

Molaire, Michel F., to Eastman Kodak Company. Photopolymerizable compositions featuring improved monomers. 4,322,490, Cl. 430-281.000.

Molari, Richard E., Jr., to General Electric Company. Impact resistant laminate. 4,322,476, Cl. 428-412.000.

Mollura, Carlos A. Water mattress with damper bladders. 4,321,719, Cl. 5-451.000.

Molnlycke AB: *See*—
Hoborn, Jan; and Krebs, Ulrich, 4,321,925, Cl. 128-303.130.

Monsanto Company: *See*—
Chupp, John P., 4,322,553, Cl. 564-209.000.
Conlon, Lawrence E., 4,322,260, Cl. 156-244.120.
Dutra, Gerard A.; and Sikorski, James A., 4,322,238, Cl. 71-86.000.
Dutra, Gerard A.; and Sikorski, James A., 4,322,239, Cl. 71-86.000.
Lee, Cheng H.; and Henis, Jay M. S., 4,322,501, Cl. 521-32.000.

Moon, Charles G. Automotive light circuit. 4,322,715, Cl. 340-81.00R.

Moore, Sanders H.: *See*—
Wright, David B.; Moore, Sanders H.; and Kircher, Morton S., 4,322,281, Cl. 204-237.000.

Moore, William J. M.; and Kusters, Norbert L., to Canadian Patents & Dev. Limited. Alternating current comparator bridge for resistance measurement. 4,322,679, Cl. 324-62.000.

Moorhouse, David: *See*—
Barley, Geoffrey W.; and Moorhouse, David, 4,322,111, Cl. 297-357.000.

Moorhouse, John H. Coded solid state entry device. 4,322,719, Cl. 235-382.000.

Moravec, John V.: *See*—
Slavik, William H.; and Moravec, John V., 4,322,073, Cl. 273-16.00C.

Morawski, Jean-Claude: *See*—
Machurat, Jean; Morawski, Jean-Claude; and Soula, Gerard, 4,322,336, Cl. 524-104.000.

Moreau, Michele, nee Huguet: *See*—
Stjepanovic, Milorad; Moreau, Michele, nee Huguet; and Dugniolle, Jacques, 4,322,410, Cl. 424-180.000.

Morelli, Luigi: *See*—
Capots, Larry H.; George, James; and Morelli, Luigi, 4,322,678, Cl. 324-61.00R.

Morey, Robert E. Fluid device for vehicle fuel consumption enhancement. 4,321,899, Cl. 123-319.000.

Morgan, Curtis, to Martek Products, Inc. Vehicle anti-theft alarm. 4,322,714, Cl. 340-65.000.

Morgan, Howard W., Jr. Multiple element filter. 4,322,293, Cl. 210-232.000.

Moriceau, Hubert: *See*—
Challeton, Didier; Daval, Jacques; Ferrand, Bernard; and Moriceau, Hubert, 4,322,454, Cl. 427-128.000.

Moriguchi, Haruhiko; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Heat sensitive recording head drive device. 4,322,733, Cl. 346-76.0PH.

Morihisa, Mitsuo, to Sharp Kabushiki Kaisha. Crystal oscillator implemented with CMOS technology. 4,322,694, Cl. 331-116.0FE.

Morrison-Knudsen Forest Products Company, Inc.: *See*—
Bleymaier, Joseph S.; Farnworth, Wilfred; and Peters, Thomas E., 4,322,380, Cl. 264-24.000.

Mosely, Jeannine. Vegetable drying apparatus. 4,321,756, Cl. 34-8.000.

Moss, Richard D.: *See*—
Lim, Franklin; and Moss, Richard D., 4,322,311, Cl. 252-316.000.

Motoori, Ryuzo; and Hagyuda, Nobuyoshi, to Nippon Kogaku K.K. Data recording device. 4,322,147, Cl. 354-106.000.

Motoren-und Turbinen Union: *See*—
Siebmanns, Wilhelm, 4,322,458, Cl. 427-331.000.

Muckenhoff, Klaus: *See*—
Luttmann, Alwin; Plaas-Link, Andreas; and Muckenhoff, Klaus, 4,322,681, Cl. 324-77.00D.

Mullendore, James A.: *See*—
Patrician, Thomas J.; Mullendore, James A.; Weaver, Theodore L.; and Charlesworth, Clayton D., 4,322,248, Cl. 75-245.000.

Muller, Beat; Kump, Wilhelm; and Wacker, Oskar, to Ciba-Geigy Corporation. Bicyclomycin derivatives, compositions thereof and process of use thereof. 4,322,419, Cl. 424-250.000.

Muller, Karl-Hans; and Barthel, Walter, to Duetsche Gold- und Silber-Scheideanstalt vormals Roessler. Mastic asphalt mixture. 4,322,250, Cl. 106-281.00R.

Muller, Rainer: *See*—
Frewer, Hans; Muller, Rainer; and Schiffers, Ulrich, 4,322,243, Cl. 75-34.000.

Muller, Rolf, to Papst Motoren GmbH & Co., KG. Brushless, permanent magnet d-c pulse current controlled, essentially uniform torque dynamo electric machine particularly motor. 4,322,666, Cl. 318-254.000.

Mullins, John B., Jr. Method and apparatus for installing a security bar assembly at a guarded area. 4,321,770, Cl. 49-50.000.

Multisonics, Inc.: *See*—
Williamson, Richard A.; and Gitelson, Derek, 4,322,801, Cl. 364-436.000.

Mumford, George V., to Owens-Illinois, Inc. Tamper proof molded plastic closure. 4,322,009, Cl. 215-253.000.

Mumford, George V., to Owens-Illinois, Inc. Side seal closure. 4,322,011, Cl. 215-270.000.

Murakami, Shigetoshi: *See*—
Mogi, Takao; Murakami, Shigetoshi; Okada, Hisao; and Ishigaki, Yoshio, 4,322,855, Cl. 455-151.000.

Murakami, Yoshiaki; Ohmori, Akira; and Ohhara, Seishichi, to Clarion Co., Ltd. Illumination mechanism. 4,322,780, Cl. 362-31.000.

Murata Manufacturing Co., Ltd.: *See*—
Inoue, Atsushi; Yamada, Hiromichi; and Suzuki, Kenji, 4,322,651, Cl. 310-313.00B.
Otsuka, Eizo, 4,322,652, Cl. 310-345.000.

Murray, Gerard J.: *See*—
Hughes, Jeffrey; and Murray, Gerard J., 4,322,364, Cl. 260-453.0AM.

Muto, Hiroaki: *See*—
Onda, Yoshiro; Muto, Hiroaki; and Suzuki, Hiroshi, 4,322,524, Cl. 536-55.000.

Myers, Melvyn J.: *See*—
Hermann, Edward C.; Lee, Kyu T.; and Myers, Melvyn J., 4,322,426, Cl. 424-260.000.

Myers, William P.; Torzala, Terence A.; and Henneman, John W., to Bendix Corporation, The. Pneumatically actuated electronic control for a fluid mixture adsorption separator. 4,322,228, Cl. 55-163.000.

Nagahara, Shusaku: *See*—
Takemoto, Iwao; Nagahara, Shusaku; Fujita, Tsutomu; and Sato, Kazuo, 4,322,740, Cl. 358-44.000.

Nagai, Shigeki: *See*—
Kobayashi, Shinsaku; Kamoshita, Katsuo; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Takashi; and Kojima, Mikio, 4,322,420, Cl. 424-251.000.

Nagami, Akira, to Nippon Electric Co., Ltd. Flexible hidden refresh memory circuit. 4,322,825, Cl. 365-203.000.

Nagano, Chikara, to Olympus Optical Co., Ltd. Microscope objective lens system. 4,322,136, Cl. 350-414.000.

Naganuma, Masako: *See*—
Okazaki, Tomomi; Tomita, Kenichi; Katsura, Hakuji; Tejima, Masayuki; and Naganuma, Masako, 4,322,544, Cl. 560-55.000.

Nagel, Hartmut: *See*—
Menth, Anton; Nagel, Hartmut; and Spinner, Ulrich, 4,322,257, Cl. 148-101.000.

Nakagawa, Kazuyuki: *See*—
Yabuuchi, Yoichi; Yoshizaki, Shiro; and Nakagawa, Kazuyuki, 4,322,425, Cl. 424-258.000.
Nakaguchi, Osamu: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,322,341, Cl. 260-112.50R.
Nakahara, Yoshihiko; Tsujii, Norihiro; Nakanishi, Kenichi; Sakai, Yuji; and Saigo, Masanori, to Kyodo Insatsu Kabushiki Kaisha; and Lion Kabushiki Kaisha. Metal tube and apparatus and method for manufacturing the same. 4,321,816, Cl. 72-267.000.
Nakahashi, Masako: *See*—
Komatsu, Shuichi; Nakahashi, Masako; Takeda, Hiromitsu; and Yamada, Masayuki, 4,321,821, Cl. 73-15.00R.
Nakamichi Corporation: *See*—
Ohya, Hiroshi; and Kobayashi, Kozo, 4,322,758, Cl. 360-31.000.
Nakamizo, Nobuhiro: *See*—
Hirata, Tadashi; Sato, Akira; and Nakamizo, Nobuhiro, 4,322,345, Cl. 260-239.00A.
Nakamura, Takashi; and Chiba, Yoshio, to Sony Corporation. Apparatus for controlling the electron beam in an image pick-up tube. 4,322,662, Cl. 315-383.000.
Nakamura, Tatsushi: *See*—
Yamashita, Tadaoki; Ohta, Takeo; Akahira, Nobuo; Nakamura, Tatsushi; and Takenaga, Mutsuo, 4,322,839, Cl. 369-122.000.
Nakanishi, Hirokazu: *See*—
Mita, Tetsuo; Tani, Nobutaka; Nakanishi, Hirokazu; Takase, Junji; and Isayama, Katsuhiko, 4,322,272, Cl. 204-159.130.
Nakanishi, Kenichi: *See*—
Nakahara, Yoshihiko; Tsujii, Norihiro; Nakanishi, Kenichi; Sakai, Yuji; and Saigo, Masanori, 4,321,816, Cl. 72-267.000.
Nakano, Keita; and Itoh, Masanori, to Xerox Corporation. Electrostatic recording medium. 4,322,469, Cl. 428-212.000.
Nakauchi, Hiroshi: *See*—
Uede, Hisashi; Yano, Kohzo; Hamada, Hiroshi; Nakauchi, Hiroshi; and Inami, Yasuhiko, 4,322,133, Cl. 350-357.000.
Nakayama, Kenji, to Nippon Electric Co., Ltd. Digital filters with reduced multiplier circuitry. 4,322,810, Cl. 364-724.000.
Nakazawa, Eiji, to Casio Computer Co., Ltd. Electronic timepiece having an alarm unit. 4,322,830, Cl. 368-29.000.
Nalco Chemical Company: *See*—
Braithwaite, David G., 4,322,532, Cl. 546-128.000.
Nambu, Hirohiko: *See*—
Matsunaga, Fujihisa; Ohno, Norio; and Nambu, Hirohiko, 4,322,567, Cl. 568-815.000.
Nankinov, Ivan D.: *See*—
Dimov, Peter S.; Pavlov, Georgi N.; Stoyanov, Atanas N.; and Nankinov, Ivan D., 4,321,863, Cl. 99-470.000.
Nason, Bruce F. Pipe-bending tool. 4,321,820, Cl. 72-459.000.
National Distillers & Chemical Corp.: *See*—
Horvitz, David; and Baugh, William D., 4,322,355, Cl. 260-340.700.
Pyle, Lorrin W., 4,322,326, Cl. 524-513.000.
National Research Development Corporation: *See*—
Fowell, Alan; Shaw, Trevor W.; and Crookall, John R., 4,322,595, Cl. 219-69.00C.
McKelvie, James; and Walker, Colin A., 4,322,162, Cl. 356-35.500.
National Research Institute for Metals: *See*—
Tachikawa, Kyoji; Inoue, Kiyoshi; and Togano, Kazumasa, 4,321,749, Cl. 29-599.000.
National Steel Corporation: *See*—
Barkley, Harold K., 4,321,884, Cl. 118-63.000.
Natkins, Ephraim, to American Casting & Mfg. Corporation. Strap tightening hand tool. 4,321,952, Cl. 140-93.200.
Nealis, Perry M. Interlocking modular table unit. 4,321,873, Cl. 108-91.000.
Neamtu, Nicolae, to Gillette Company, The. Tool holder. 4,321,846, Cl. 82-36.00R.
Neeper, Robert K.: *See*—
Lillig, John E.; Neeper, Robert K.; and Ashton, Paul J., 4,322,216, Cl. 23-230.00R.
NEFCO, Division Neiman Industries, Inc.: *See*—
Journee, Maurice A., 4,321,725, Cl. 15-250.320.
Negi, Virendra S.: *See*—
Carroll, Elmer W.; Negi, Virendra S.; and Peters, Arthur, 4,322,846, Cl. 371-16.000.
Nelson, Charles W. Climbing apparatus. 4,321,983, Cl. 182-136.000.
Nelson, Gunner E.; and Dagani, Michael J., to Ethyl Corporation. Conversion of ethers to thioamines. 4,322,539, Cl. 548-342.000.
Nelson, Hugh W., to Combustion Engineering, Inc. Process for catalyzing reduction in a Kraft recovery boiler. 4,322,266, Cl. 162-30.00K.
Nelson, James A.; and Sorenson, James A., to University of Utah. Optical masking radiography. 4,322,619, Cl. 250-323.000.
Nepon Kabushiki Kaisha (NEPON Inc.): *See*—
Takai, Souichi; Watanabe, Yukinori; and Matsumoto, Kaname, 4,321,714, Cl. 4-310.000.
Neroda, Thomas H.; Flaherty, George A.; and Evans, David L., to Scott & Fetzer Company, The. Motor assembly. 4,322,647, Cl. 310-71.000.
Nespor, Ronald R. Push bumper for tow trucks. 4,322,106, Cl. 296-121.000.
Neumann, Hans D., to Hewlett-Packard Company. Dynamic focus adjustment for transmissive or reflective optical disc memory systems. 4,322,838, Cl. 369-45.000.
Neustadt, Bernard R.; and Gold, Elijah H., to Schering Corporation. N-Substituted-4-(polyfluoro-2-hydroxy-2-propyl)anilines and compounds related thereto. 4,322,434, Cl. 424-304.000.
New York University: *See*—
Fish, Irving; Schwartz, Stephen A.; and Samuels, Stanley, 4,322,440, Cl. 424-319.000.
Newell, Carl W. Crimping tool and electrical connector assembly. 4,322,123, Cl. 339-276.00R.
Newell, William H., to Perkin-Elmer Corporation, The. Image transfer device using mirror moving on spherical focal surface. 4,322,131, Cl. 350-289.000.
Newton, David: *See*—
Zuilichem, Dirk J. V.; Veenendaal, Jan; and Newton, David, 4,322,444, Cl. 426-241.000.
Nicely, Thomas E.: *See*—
Kelly, Calvin E.; and Nicely, Thomas E., 4,322,101, Cl. 292-260.000.
Nicholas, Karl W.: *See*—
Rog, Joseph W.; Nicholas, Karl W.; and Waits, Charles G., 4,322,805, Cl. 364-481.000.
Nichols, Robert L. Low profile shut-off valve for medical suction apparatus. 4,321,923, Cl. 128-276.000.
Nickles, R. Benton, Jr.: *See*—
Streich, Steven G.; and Nickles, R. Benton, Jr., 4,322,181, Cl. 405-224.000.
Nield, Eric, to Imperial Chemical Industries Limited. Fast crystallizing block copolyester composition. 4,322,335, Cl. 523-522.000.
Nielsen, Anker: *See*—
Davis, George W.; Kulzer, Hank; and Nielsen, Anker, 4,321,740, Cl. 29-402.090.
Nifco Inc.: *See*—
Hara, Kunio, 4,322,705, Cl. 337-407.000.
Niggemann, Johannes; Kuhle, Engelbert; and Klauke, Erich, to Bayer Aktiengesellschaft. Preserving cut flowers with N-(trifluoromethyl)-N-(dichlorofluoromethylsulphenyl)-aminobenzoic acids. 4,322,237, Cl. 71-68.000.
Nippon Electric Co., Ltd.: *See*—
Ishihara, Yasuo, 4,322,753, Cl. 358-213.000.
Minowa, Junichiro; Fujii, Yohji; Aoyama, Tsutomu; and Doi, Kikuo, 4,322,126, Cl. 350-96.200.
Nagami, Akira, 4,322,825, Cl. 365-203.000.
Nakayama, Kenji, 4,322,810, Cl. 364-724.000.
Sasaki, Isao; Hotta, Nobuaki; and Tsujide, Tohru, 4,322,736, Cl. 357-59.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Adachi, Takeshi, 4,321,851, Cl. 84-1.010.
Oya, Akiyoshi; and Uchiyama, Yasuji, 4,321,850, Cl. 84-1.010.
Nippon Kogaku K.K.: *See*—
Fukuhara, Toru, 4,322,615, Cl. 250-204.000.
Fukuhara, Toru; and Utagawa, Ken, 4,322,616, Cl. 250-204.000.
Katayama, Akira; and Higashi, Koichi, 4,322,153, Cl. 354-225.000.
Maida, Osamu, 4,322,149, Cl. 354-173.000.
Motoori, Ryuzo; and Hagyuda, Nobuyoshi, 4,322,147, Cl. 354-106.000.
Nohda, Masao, 4,322,137, Cl. 351-7.000.
Nippon Oil Co., Ltd.: *See*—
Hara, Hajime; Orii, Shingo; and Araki, Yoshihiko, 4,322,470, Cl. 428-246.000.
Miyoshi, Mituji; Matsuura, Kazuo; and Tajima, Yoshio, 4,322,514, Cl. 526-124.000.
Nippon Paint Co., Ltd.: *See*—
Mizuguchi, Ryuzo; Ishikura, Shin-ichi; and Ishii, Keizo, 4,322,324, Cl. 528-290.000.
Nippon Soken, Inc.: *See*—
Kohama, Tokio; Matsui, Takeshi; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,322,799, Cl. 364-431.060.
Tanaka, Katsuyuki; Kuwakado, Satosi; Tsuge, Noboru; and Shimogawa, Toshiaki, 4,322,046, Cl. 242-107.40A.
Yasuda, Eturo; Sato, Susumu; Segawa, Yoshihiro; Hattori, Tadashi; and Aoki, Keiji, 4,322,383, Cl. 422-95.000.
Nippon Telegraph & Telephone Public Corp.: *See*—
Minowa, Junichiro; Fujii, Yohji; Aoyama, Tsutomu; and Doi, Kikuo, 4,322,126, Cl. 350-96.200.
Nippon Zeon Co., Ltd.: *See*—
Joh, Yasushi, 4,322,381, Cl. 264-41.000.
Nippondenso Co., Ltd.: *See*—
Hisegawa, Takashi; Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; Kumano, Mikio; and Sumiyoshi, Masaharu, 4,322,800, Cl. 364-431.050.
Ishii, Yoshiya; Fujitani, Nobuyuki; Imamura, Hiroshi; Arai, Kazuyoshi; and Aoki, Toshiaki, 4,322,174, Cl. 403-12.000.
Ito, Isao, 4,321,748, Cl. 29-596.000.
Kondo, Toshio; Kobayashi, Akio; Eino, Tomomi; and Fukue, Naofumi, 4,321,903, Cl. 123-440.000.
Nishi, Kunihiko; Wakashima, Yoshiaki; Suzuki, Akira; Kaneda, Aizo; and Tuzuku, Sumumu, to Hitachi, Ltd. Apparatus for pre-heating resin tablet. 4,322,593, Cl. 219-10.810.
Nishimatsu, Akira: *See*—
Kohama, Tokio; Matsui, Takeshi; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,322,799, Cl. 364-431.060.
Nissan Motor Company, Limited: *See*—
Ishizuka, Hiroshi; and Kunogi, Kazuhiko, 4,322,107, Cl. 296-146.000.
Koike, Shoichi, 4,321,771, Cl. 49-360.000.

Onda, Kiyoshi, 4,322,105, Cl. 296-93.000.
Sugasawa, Fukashi, 4,322,642, Cl. 307-522.000.

Nissen, Roland N., to J. I. Case Company. Mono stick assembly with adjustable creep control. 4,321,980, Cl. 180-333.000.

Nisshin Flour Milling Co., Ltd.: *See—*
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,322,555, Cl. 564-305.000.

Nohda, Masao, to Nippon Kogaku K.K. Fundus observation and photographing optical system. 4,322,137, Cl. 351-7.000.

Nohira, Hidetaka: *See—*
Kohama, Tokio; Matsui, Takeshi; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,322,799, Cl. 364-431.060.

Nomaguchi, Kanemasa: *See—*
Arakawa, Kouji; Nomaguchi, Kanemasa; and Iwami, Etsuji, 4,322,334, Cl. 523-512.000.

Nordischer Maschinenbau Rud. Baader GmbH Co. & KG: *See—*
Ollik, Reinhard, 4,321,729, Cl. 17-63.000.

Normand Trust, The: *See—*
Mercier, Jacques H., 4,321,949, Cl. 138-30.000.

Norstedt, Bertil: *See—*
Andersson, Kurt-Inge; Gjerstad, Victor; Gohl, Karl G.; Hallberg, Lars; Norstedt, Bertil; and Schaal, Helmut, 4,322,793, Cl. 364-200.000.

North American Philips Corporation: *See—*
Jenkins, Ronald, 4,322,618, Cl. 250-272.000.

Northern Telecom Limited: *See—*
Charlebois, Leonard J., 4,322,573, Cl. 174-72.00R.
Mein, Gordon F.; and Terry, John B., 4,322,586, Cl. 179-170.0NC.
Zuber, Bretislav P., 4,322,198, Cl. 414-754.000.

Norton Company: *See—*
Van de Walker, Roger; and Draper, Weston E., Jr., 4,321,998, Cl. 206-229.000.

Nouvertne, Werner: *See—*
Schmidt, Manfred; Bottenbruch, Ludwig; Freitag, Dieter; and Nouvertne, Werner, 4,322,520, Cl. 528-167.000.

Novanex Automation N.V.: *See—*
Laupman, Robert R., 4,322,690, Cl. 330-298.000.

Nozaki, Kenzie, to Shell Oil Company. SO_2 Capture-coal combustion. 4,322,218, Cl. 44-1.0SR.

Nuvatec/Inc.: *See—*
Slavik, William H.; and Moravec, John V., 4,322,073, Cl. 273-16.00C.

Oakland Corporation, The: *See—*
Wallace, Richard B., 4,321,885, Cl. 118-102.000.

Oblonsky, Jan G.: *See—*
Fennel, John W., Jr.; and Oblonsky, Jan G., 4,322,845, Cl. 370-104.000.

O'Brien, Dennis E.: *See—*
Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S., deceased; and Klein, Robert R., 4,322,329, Cl. 524-389.000.

Occidental Petroleum Corporation: *See—*
Sass, Allan, 4,322,222, Cl. 48-197.00R.

Oce-van der Grinten N.V.: *See—*
de Putter, Jan A.; and Kortenoeven, Johannes, 4,322,486, Cl. 430-31.000.
van der Blom, Laurens, 4,321,757, Cl. 34-23.000.

Oda, Kiroku: *See—*
Kobayashi, Shinsaku; Kamoshita, Katsuo; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Takashi; and Kojima, Mikio, 4,322,420, Cl. 424-251.000.

Oehrig, Kenneth H.; and Petkewicz, Frank J., to GTE Automatic Electric Labs Inc. Electromagnetic device utilizing a pair of magnetically activated electronic switches. 4,322,708, Cl. 338-32.00H.

Off, Joseph W. A., to Haggar Company. Pocket construction. 4,321,710, Cl. 2-247.000.

Offutt, Worthington W. Modular solar collector system. 4,321,911, Cl. 126-448.000.

Ogawa, Ryota: *See—*
Takahashi, Sataro; Ogawa, Ryota; and Arai, Yasunori, 4,322,159, Cl. 355-57.000.

Ogawa, Yukio: *See—*
Yamada, Tateo; Harigaya, Isao; Ogawa, Yukio; and Hirohata, Michio, 4,322,145, Cl. 354-50.000.

Oguino, Masanori, to Hitachi, Ltd. Crosstalk attenuator system. 4,322,746, Cl. 358-127.000.

Ohba, Shunjiro. DC Machine control circuit. 4,322,667, Cl. 318-338.000.

Ohhara, Minoru: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,322,408, Cl. 424-180.000.
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,322,409, Cl. 424-180.000.

Ohhara, Seishichi: *See—*
Murakami, Yoshiaki; Ohmori, Akira; and Ohhara, Seishichi, 4,322,780, Cl. 362-31.000.

Ohloff, Fritz-Gunter: *See—*
Schwab, Max; Heinen, Peter; Diederichs, Willi; Gossens, Peter; Ohloff, Fritz-Gunter; and Minkenberg, Hubert, 4,321,843, Cl. 76-107.00A.

Ohmori, Akira: *See—*
Murakami, Yoshiaki; Ohmori, Akira; and Ohhara, Seishichi, 4,322,780, Cl. 362-31.000.

Ohmori, Takashi: *See—*
Moriguchi, Haruhiko; and Ohmori, Takashi, 4,322,733, Cl. 346-76.0PH.

Ohmura, Yoshio: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,322,408, Cl. 424-180.000.
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,322,409, Cl. 424-180.000.

Ohmuro, Shigeru: *See—*
Hongu, Masayuki; Ohmuro, Shigeru; and Tokuhara, Masaharu, 4,322,751, Cl. 358-195.100.

Ohno, Norio: *See—*
Matsunaga, Fujihisa; Ohno, Norio; and Nambu, Hirohiko, 4,322,567, Cl. 568-815.000.

Ohori, Tamio: *See—*
Ebi, Yutaka; Ohori, Tamio; Matsumoto, Fuyuhiko; and Tomita, Satoru, 4,322,734, Cl. 346-153.100.

Ohta, Hirofumi: *See—*
Hiroshima, Minoru; and Ohta, Hirofumi, 4,322,818, Cl. 365-27.000.

Ohta, Hisatoshi: *See—*
Kuroyama, Toshinobu; and Ohta, Hisatoshi, 4,321,979, Cl. 180-268.000.

Ohta, Shigeo; Suzuki, Takeo; and Kuwabara, Kazumi, to Alps Electric Co., Ltd. Double superheterodyne tuner for receiving television aural signals. 4,322,856, Cl. 455-189.000.

Ohta, Takeo: *See—*
Yamashita, Tadaoki; Ohta, Takeo; Akahira, Nobuo; Nakamura, Tatsushi; and Takenaga, Mutsuo, 4,322,839, Cl. 369-122.000.

Ohya, Hiroshi; and Kobayashi, Kozo, to Nakamichi Corporation. Fluorescent indicator. 4,322,758, Cl. 360-31.000.

Okada, Hisao: *See—*
Mogi, Takao; Murakami, Shigetoshi; Okada, Hisao; and Ishigaki, Yoshio, 4,322,855, Cl. 455-151.000.

Okada, Satoshi: *See—*
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,322,341, Cl. 260-112.50R.

Okazaki, Tomomi; Tomita, Kenichi; Katsura, Hakuji; Tejima, Masayuki; and Naganuma, Masako, to Toray Industries, Inc. Ultraviolet absorbing agent. 4,322,544, Cl. 560-55.000.

Oldenkamp, Ralph J., to Vendacopy, Inc. Method for tamper-proofing magnetic stripe card reader. 4,322,613, Cl. 235-449.000.

Olin Corporation: *See—*
Debiase, Bennet W.; Ryder, Harold W.; Silvestri, Pasquale; and Whalen, John M., 4,322,060, Cl. 266-89.000.
Wright, David B.; Moore, Sanders H.; and Kircher, Morton S., 4,322,281, Cl. 204-237.000.
Yarwood, John C.; Ungarean, Gary L.; Tyler, Derek E.; and Gaule, Gerhart K., 4,321,959, Cl. 164-467.000.

Oliphant, Peter A.: *See—*
James, David F.; Oliphant, Peter A.; and Effler, Timothy A., 4,322,074, Cl. 273-1.00E.

Oliver, George A. Mechanical stress grading of timber. 4,321,834, Cl. 73-812.000.

Ollik, Reinhard, to Nordischer Maschinenbau Rud. Baader GmbH Co. & KG. Apparatus for aligning fish. 4,321,729, Cl. 17-63.000.

Olson, Daniel R.; and Ching, Ta Y., to General Electric Company. Process for producing an ultraviolet radiation stabilized polymeric article. 4,322,455, Cl. 427-160.000.

Olson, David A. Material moving apparatus. 4,322,023, Cl. 222-380.000.

Olson, Eric V.: *See—*
Mickleson, Lee; and Olson, Eric V., 4,322,837, Cl. 369-44.000.

Olsson, Rolf, to Alfa-Laval AB. Device for opening and closing the outlet of a worm conveyor. 4,322,021, Cl. 222-231.000.

Olympus Optical Co. Ltd.: *See—*
Furuta, Kenji, 4,322,765, Cl. 360-137.000.
Nagano, Chikara, 4,322,136, Cl. 350-414.000.

Omori, Takashi: *See—*
Kinoshita, Mitsuo; and Omori, Takashi, 4,322,267, Cl. 376-216.000.

Onda, Kazuyoshi: *See—*
Saeki, Yoshifumi; and Onda, Kazuyoshi, 4,322,745, Cl. 358-123.000.

Onda, Kiyoshi, to Nissan Motor Company, Limited. Window decorative arrangement for automotive vehicle. 4,322,105, Cl. 296-93.000.

Onda, Yoshiro; Muto, Hiroaki; and Suzuki, Hiroshi, to Shin-Etsu Chemical Co. Ltd. Cyanoethylpullulan. 4,322,524, Cl. 536-55.000.

Ong, Sien L.: *See—*
Tappe, Horst; Kindler, Horst; Roth, Kurt; and Ong, Sien L., 4,322,213, Cl. 8-449.000.

Onishi, Ken; Ozaki, Minoru; and Tanaka, Kunimaro, to Mitsubishi Denki Kabushiki Kaisha. Editing system for PCM signal tape. 4,322,756, Cl. 360-13.000.

Onoda, Takeru; Wada, Keisuke; Kageyama, Hironori; Yamanouchi, Hideki; and Karube, Kenji, to Mitsubishi Chemical Ind.; and Lion Corporation. Process for separating cobalt component from hydroesterification reaction mixture. 4,322,314, Cl. 252-412.000.

Opresko, Stephen T., to RCA Corporation. Step mask for substrate sputtering. 4,322,277, Cl. 204-192.00R.

Optsonic Research Associates, Inc.: *See—*
Horn, Michael, 4,321,830, Cl. 73-607.000.

Orii, Shingo: *See—*
Hara, Hajime; Orii, Shingo; and Araki, Yoshihiko, 4,322,470, Cl. 428-246.000.

Ort, Werner, to Hottinger Baldwin Measurements, Inc. Strain gage transducer with a foil strain gage arrangement secured to a spring. 4,322,707, Cl. 338-2.000.

Ortho Pharmaceutical Corporation: *See—*
Ahmad, Nawaz; Kaplan, Leonard; and Ziets, George, 4,322,399, Cl. 424-44.000.
Hajos, Zoltan G.; and Wachter, Michael P., 4,322,353, Cl. 260-340.600.
Kanojia, Ramesh M., 4,322,357, Cl. 260-345.80R.

Ostgaard, John T. Apparatus and method for under-water jacking of piles. 4,322,182, Cl. 405-227.000.

Ostrowski, John S.: *See—*
Castellucci, Nicholas T.; Ostrowski, John S.; and Grunewalder, John F., 4,322,459, Cl. 428-386.000.

Otis Engineering Corporation: *See—*
Restarick, Henry L.; and Setterberg, John R., Jr., 4,321,965, Cl. 166-117.500.

Otsuka, Eizo, to Murata Manufacturing Co., Ltd. Piezoelectric resonator support with direction-oriented conductive plastic plate. 4,322,652, Cl. 310-345.000.

Otsuka Pharmaceutical Co., Ltd.: *See—*
Yabuuchi, Yoichi; Yoshizaki, Shiro; and Nakagawa, Kazuyuki, 4,322,425, Cl. 424-258.000.

Otto, Roger C. Wheeled walking aid with seat and hand brake. 4,322,093, Cl. 280-650.000.

Overaker, Ronald F.: *See—*
Jobsis, Frans F.; Keizer, Johannes H.; and Overaker, Ronald F., 4,321,930, Cl. 128-633.000.

Owens-Illinois, Inc.: *See—*
Mumford, George V., 4,322,009, Cl. 215-253.000.
Mumford, George V., 4,322,011, Cl. 215-270.000.

Oximetrix, Inc.: *See—*
Shaw, Robert F.; and Sperinde, John M., 4,322,164, Cl. 356-243.000.

Oya, Akiyoshi; and Uchiyama, Yasuji, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with highest priority key tone production. 4,321,850, Cl. 84-1.010.

Ozaki, Minoru: *See—*
Onishi, Ken; Ozaki, Minoru; and Tanaka, Kunimaro, 4,322,756, Cl. 360-13.000.

Ozawa, Keiji: *See—*
Kinjo, Hisao; and Ozawa, Keiji, 4,322,836, Cl. 369-43.000.

Ozawa, Ryuichi: *See—*
Tanimoto, Tatsuo; Ozawa, Ryuichi; and Tarumasa, Noriyoshi, 4,322,185, Cl. 407-23.000.

Packard, Thomas N., to Packburn Electronics. Noise reduction system. 4,322,641, Cl. 307-521.000.

Packburn Electronics: *See—*
Packard, Thomas N., 4,322,641, Cl. 307-521.000.

Padgitt, Howard R.; and Ferrin, Frank J., to Honeywell Inc. Low cost wide field of view infrared sensor. 4,322,124, Cl. 350-1.400.

Page, Donald F.: *See—*
Lesher, George Y.; Page, Donald F.; and Gruett, Monte D., 4,322,533, Cl. 546-273.000.

Painter, Donald S.; and Graeme-Barber, Christopher, to K. Shoemakers Limited. Manufacture of footwear. 4,321,721, Cl. 12-146.00C.

Palazzetti, Mario; and Cane, Giuseppe, to Centro Ricerche Fiat S.p.A. Method for heating water used in an appliance connected into a domestic water circuit and the apparatus for carrying out said method. 4,321,798, Cl. 62-79.000.

Palen, Nelson J.: *See—*
Hake, Kenneth A.; and Palen, Nelson J., 4,321,971, Cl. 172-710.000.

Palfalvi, Gyorgy: *See—*
Vadas, Zoltan; Belcsak, Zoltan; Luptak, Erno; Palfalvi, Gyorgy; Vasvari, Vilmos; and Wenzel, Bela, 4,321,790, Cl. 60-39.020.

Pall Corporation: *See—*
Christel, Conrad, Jr., 4,322,223, Cl. 55-18.000.

Pankove, Jacques I.; and Wu, Chung P., to RCA Corporation. Method of making selective crystalline silicon regions containing entrapped hydrogen by laser treatment. 4,322,253, Cl. 148-1.500.

Papenmeier, Horst. Apparatus for the preparation of PVC-powder. 4,322,170, Cl. 366-141.000.

Pappo, Raphael: *See—*
Collins, Paul W.; and Pappo, Raphael, 4,322,543, Cl. 556-436.000.

Papst Motoren GmbH & Co., KG: *See—*
Muller, Rolf, 4,322,666, Cl. 318-254.000.

Park Mobile, Inc.: *See—*
Evans, Edward N., 4,322,804, Cl. 364-478.000.

Parker Pen Company, The: *See—*
Schmidt, Gunther, 4,322,099, Cl. 292-19.000.

Parker, Stephen D., to Fleit & Jacobson. Method and apparatus for calibrating a gamma counter. 4,322,617, Cl. 250-252.000.

Parlman, Robert M.; and Burns, Lyle D., to Phillips Petroleum Company. Bis(disubstituted aminomethyl)phenols as ashless hydrocarbon additives. 4,322,304, Cl. 252-51.50R.

Patrician, Thomas J.; Mullendore, James A.; Weaver, Theodore L.; and Charlesworth, Clayton D., to GTE Products Corporation. Doped molybdenum-tantalum wire and method for making. 4,322,248, Cl. 75-245.000.

Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., to Texaco Inc. Method for preparing aniline by reaction of nitrobenzene and vinylcyclohexene. 4,322,556, Cl. 564-423.000.

Patterson, Williams G.: *See—*
Jacobson, Kenneth E.; Gutierrez, William S.; and Patterson, Williams G., 4,322,030, Cl. 233-23.00R.

Paul-Munroe Hydraulics, Inc.: *See—*
Carl, John R., 4,322,290, Cl. 210-133.000.

Paul Wurth, S.A.: *See—*
Mahr, Rene; Radoux, Henri; Mailliet, Pierre; and Lonardi, Emile, 4,322,197, Cl. 414-206.000.

Paulos, Louis B.; and Huebsch, Donald L. Armature position monitoring and control device. 4,321,946, Cl. 137-554.000.

Pavlov, Georgi N.: *See—*
Dimov, Peter S.; Pavlov, Georgi N.; Stoyanov, Atanas N.; and Nankinov, Ivan D., 4,321,863, Cl. 99-470.000.

Payer, Heike U.: *See—*
Brandt, Helmut; Payer, Helga U.; Payer, Michael A.; and Payer, Heike U., 4,321,795, Cl. 62-54.000.

Payer, Helga U.: *See—*
Brandt, Helmut; Payer, Helga U.; Payer, Michael A.; and Payer, Heike U., 4,321,795, Cl. 62-54.000.

Payer, Michael A.: *See—*
Brandt, Helmut; Payer, Helga U.; Payer, Michael A.; and Payer, Heike U., 4,321,795, Cl. 62-54.000.

Payne, Trevor G.: *See—*
Berthold, Richard; and Payne, Trevor G., 4,322,437, Cl. 424-316.000.

Payot, Jocelyne: *See—*
Grudzinski, Richard, 4,322,724, Cl. 340-595.000.

Peck, Gary L., to United States of America, America. Method for the use of orally administered 13-cis-retinoic acid in the treatment of acne. 4,322,438, Cl. 424-318.000.

Pelcin, Albert L., to Eastern Company, The. Paddle lock with pivotally mounted handle disconnect member. 4,321,812, Cl. 70-472.000.

Pelekis, Emmanouil A., to General Supply (Constructions) Co. Ltd. Internal combustion engine. 4,321,897, Cl. 123-238.000.

Peng, Stephen C.; and Thomson, David M., to Ford Motor Company. High solids paint composition comprising hydroxy functional oligoesters and hydroxy functional copolymers. 4,322,508, Cl. 525-110.000.

Pennington, Hugh. Image projecting amusement device. 4,322,080, Cl. 273-86.00B.

Penque, Leonard M.: *See—*
Soderberg, John H.; and Penque, Leonard M., 4,321,867, Cl. 101-91.000.

Perkin-Elmer Corporation, The: *See—*
Chamran, Morteza M.; Scott, Larkin B.; and Williams, Paul B., 4,322,807, Cl. 364-498.000.
deMey, Charles F., II, 4,322,166, Cl. 356-334.000.
Newell, William H., 4,322,131, Cl. 350-289.000.

Perkins, Carroll G.: *See—*
Sloan, Donald A.; and Perkins, Carroll G., 4,322,614, Cl. 235-458.000.

Perol, Claude: *See—*
Bouzard, Daniel; Perol, Claude; Stemer, Jacques; Weber, Abraham; and Granatek, Edmund S., 4,322,424, Cl. 424-257.000.

Perren, Benno. Self-monitoring warning installation. 4,322,721, Cl. 340-521.000.

Persidsky, Maxim D., to Advanced Blood Component Technology, Inc. Centrifugal cell separator, and method of use thereof. 4,322,298, Cl. 210-787.000.

Persson, Erland K., to Electro-Craft Corporation. Flux focussed DC motor and method for assembly. 4,322,646, Cl. 310-64.000.

Peter, Donald: *See—*
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,322,308, Cl. 252-107.000.

Peter, Siegfried; and Brunner, Gerd. Process for decaffeinating coffee. 4,322,445, Cl. 426-312.000.

Peters, Albin, to Wico Corporation. Spinning target assembly for pinball game. 4,322,082, Cl. 273-127.00D.

Peters, Arthur: *See—*
Carroll, Elmer W.; Negi, Virendra S.; and Peters, Arthur, 4,322,846, Cl. 371-16.000.

Peters, David L.: *See—*
Collier, Albert F.; and Peters, David L., 4,322,726, Cl. 340-705.000.

Peters, Thomas E.: *See—*
Bleymaier, Joseph S.; Farnworth, Wilfred; and Peters, Thomas E., 4,322,380, Cl. 264-24.000.

Peterson, Ronald H., to Simplex Time Recorder Co. Programmed digital secondary clock. 4,322,831, Cl. 368-46.000.

Peterson, Wesley R., to Singer Company, The. Uniformly lighted pattern display. 4,322,781, Cl. 362-32.000.

Petkewicz, Frank J.: *See—*
Oehrig, Kenneth H.; and Petkewicz, Frank J., 4,322,708, Cl. 338-32.00H.
Vonder, David L.; and Petkewicz, Frank J., 4,322,709, Cl. 338-32.00H.

Petzow, Gunter: *See—*
Claussen, Nils; Jahn, Jurgen; and Petzow, Gunter, 4,322,249, Cl. 501-88.000.

Pfizer Inc.: *See—*
Andrews, Glenn C., 4,322,557, Cl. 568-11.000.

Philip, Morris. Splash-proof container and cover. 4,322,014, Cl. 220-85.0SP.

Philip Morris, Incorporated: *See—*
Grollimund, Everett C., 4,322,043, Cl. 242-67.30R.
Masselin, Paul H.; and Wieland, Karl H., 4,322,067, Cl. 271-99.000.

Phillips, Graham R.: *See—*
Mezera, John R.; Dimitrios, James T.; and Phillips, Graham R., 4,322,630, Cl. 290-40.00C.

Phillips Petroleum Company: *See*—
Bellinger, Robert M.; and Gray, Michael L., 4,322,225, Cl. 55-27.000.
Clear, Elmer E., 4,321,968, Cl. 166-275.000.
Cook, Charles F.; and Hays, George E., 4,322,227, Cl. 55-68.000.
Drake, Charles A., 4,322,315, Cl. 252-415.000.
Jacobs, Eugene F., 4,322,505, Cl. 525-44.000.
Kimble, James B., 4,322,550, Cl. 562-512.000.
Parlman, Robert M.; and Burns, Lyle D., 4,322,304, Cl. 252-51.50R.
Rollmann, Kent W., 4,322,506, Cl. 525-92.000.

Pierotti, Robert A.; and Rybolt, Thomas R., to Georgia Tech Research Institute. Method for utilizing gas-solid dispersions in thermodynamic cycles for power generation and refrigeration. 4,321,799, Cl. 62-112.000.

Pietsch, Hartmut: *See*—
Jensen, Harald; Schmidt, Erwin; Mitzlaff, Michael; Cramer, Jurgen; Pistorius, Rudolf; Pietsch, Hartmut; and Dehmer, Klaus, 4,322,271, Cl. 204-73.00R.

Pike, John E.: *See*—
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,322,525, Cl. 542-421.000.

Pilarski, Regis V.: *See*—
Higbee, Wallace C.; and Pilarski, Regis V., 4,322,096, Cl. 280-804.000.

Pilkington P. E. Limited: *See*—
Freeman, Michael H., 4,322,135, Cl. 350-410.000.

Pioneer Electronic Corporation: *See*—
Saeki, Yoshifumi; and Onda, Kazuyoshi, 4,322,745, Cl. 358-123.000.
Shimada, Kunihiko; and Tsuchiya, Yukio, 4,322,584, Cl. 179-115.5VC.

Piper, Phillip G.; and Rutzen, John P., to G. R. International Electronics Limited. Electrode arrangements. 4,322,279, Cl. 204-195.00B.

Pircio, Anthony W.: *See*—
Buyniski, Joseph P.; and Pircio, Anthony W., 4,322,427, Cl. 424-260.000.

Pirlet, Robert A., to Centre de recherches Metallurgiques-Centrum voor Research in de metallurgie. Apparatus for monitoring the surface of the charge of a shaft furnace. 4,322,627, Cl. 250-561.000.

Pissiotas, Georg; and Rempfler, Hermann, to Ciba-Geigy Corporation. Pyridyl-2-oxyphenyloxime derivatives, and their use as herbicides. 4,322,241, Cl. 71-94.000.

Pistorius, Rudolf: *See*—
Jensen, Harald; Schmidt, Erwin; Mitzlaff, Michael; Cramer, Jurgen; Pistorius, Rudolf; Pietsch, Hartmut; and Dehmer, Klaus, 4,322,271, Cl. 204-73.00R.

Pitney Bowes Inc.: *See*—
Soderberg, John H.; and Penque, Leonard M., 4,321,867, Cl. 101-91.000.

Plaas-Link, Andreas: *See*—
Luttmann, Alwin; Plaas-Link, Andreas; and Muckenhoff, Klaus, 4,322,681, Cl. 324-77.00D.

Plath, Dieter: *See*—
Esser, Klaus; Durr, Helmut; and Plath, Dieter, 4,322,325, Cl. 523-457.000.

Platone, Edoardo: *See*—
Faggian, Lucio; and Platone, Edoardo, 4,322,561, Cl. 568-391.000.

Plumb, Robert C. Label removal from phonograph record disks. 4,322,252, Cl. 134-12.000.

Plumb, Robert C.; and Tantayanon, Rewat, to Worcester Polytechnic Institute. Process for changing the morphology of metal sulfates. 4,322,397, Cl. 423-544.000.

Poclain Hydraulics: *See*—
Bacquie, Serge B.; and Rouillard, Jean M. R., 4,321,855, Cl. 91-436.000.

Pohlmann, Hans J.: *See*—
Forster, Siegfried; Krauth, Axel; Maier, Horst R.; and Pohlmann, Hans J., 4,321,964, Cl. 165-165.000.

Polaroid Corporation: *See*—
Land, Edwin H.; Bronstein-Bonte, Irena Y.; and Taylor, Lloyd D., 4,322,489, Cl. 430-213.000.
Raphael, Thomas; and Shulman, Joseph, 4,322,461, Cl. 428-14.000.

Poling, Stephen M.: *See*—
Yokoyama, Henry; Hayman, Ernest P.; Hsu, Wan-Jean; and Poling, Stephen M., 4,322,242, Cl. 71-121.000.

Pomarolli, Tom: *See*—
McLennan, Lyall A.; Ganjo, John W.; and Pomarolli, Tom, 4,322,100, Cl. 292-67.000.

Pommat, Alain; and Fillion, Pierre, to Etablissements Carpano & Pons. Control device for electric motor-reduction unit. 4,322,589, Cl. 200-30.00R.

Pont-A-Mousson S.A.: *See*—
Gaudel, Gerard G., 4,321,950, Cl. 138-109.000.

Porter, Wilbur A.: *See*—
Kilby, Jack S.; McKee, William R.; and Porter, Wilbur A., 4,322,379, Cl. 264-13.000.

Potier, Pierre: *See*—
Langlois, Nicole; Langlois, Yves; and Potier, Pierre, 4,322,350, Cl. 260-244.400.

PPG Industries, Inc.: *See*—
Castellucci, Nicholas T.; Ostrowski, John S.; and Grunewalder, John F., 4,322,459, Cl. 428-386.000.
Schwenninger, Ronald L., 4,322,235, Cl. 65-182.300.
Sensi, John E., 4,322,236, Cl. 65-182.500.
Wagner, William E., 4,322,363, Cl. 260-429.700.

President and Fellows of Harvard College: *See*—
Schreiber, Stuart L., 4,322,537, Cl. 546-315.000.

Preslar, Donald R., to RCA Corporation. Digital phase comparator with improved sensitivity for small phase differences. 4,322,643, Cl. 307-528.000.

Presser, Erich: *See*—
Hinzmann, Alfred; and Presser, Erich, 4,321,993, Cl. 198-400.000.

Pressler, Klaus: *See*—
Gauri, Kailash K.; Pressler, Klaus; and Schenk, Klaus-Dirk, 4,322,404, Cl. 424-89.000.

Price, Larry D. Apparatus for removing oil and debris from water. 4,322,294, Cl. 210-242.300.

Pricer, Wilbur D.; and Selleck, James E., to International Business Machines Corp. Storage system having bilateral field effect transistor personalization. 4,322,823, Cl. 365-184.000.

Procter & Gamble Company, The: *See*—
Ahr, Nicholas A., 4,321,924, Cl. 128-287.000.

Provance, Jason D.; and Allison, Kevin W., to Ferro Corporation. Thick film conductor employing copper oxide. 4,322,316, Cl. 252-512.000.

Provensal, Jacques, to Regie Nationale des Usines Renault. Emergency release device of a safety belt. 4,322,097, Cl. 280-808.000.

Pruitt, Martin E.: *See*—
Holdeman, Adin F.; Gaeddert, Melvin V.; Ratzlaff, Howard J.; Pruitt, Martin E.; and Lohrentz, Howard R., 4,321,787, Cl. 56-341.000.

Pullman Berry Company: *See*—
Rymarchyk, Nicholas M.; and Meinert, Leo L., 4,322,033, Cl. 239-132.300.

Purvis, Michael J.: *See*—
Krechel, Joseph L.; and Purvis, Michael J., 4,321,940, Cl. 137-116.000.

Puschel, Walter: *See*—
Kunitz, Friedrich-Wilhelm; Puschel, Walter; and Schranz, Karl W., 4,322,492, Cl. 430-375.000.

Pyle, Lorrin W., to National Distillers & Chemical Corp. Ethylene-vinyl ester copolymer blended with dibasic acid-modified rosin ester. 4,322,326, Cl. 524-513.000.

Raaijmakers, Christiaan E., to J. T. Baker Chemicals B.V. Stabilized multi-purpose blood diluent. 4,322,313, Cl. 252-408.000.

Racal-Dana Instruments Limited: *See*—
Brewerton, David; and Connell, Peter P. R., 4,322,692, Cl. 331-2.000.

Racal-Milgo, Inc.: *See*—
Miller, William J., 4,322,576, Cl. 178-22.070.

Radoux, Henri: *See*—
Mahr, Rene; Radoux, Henri; Mailliet, Pierre; and Lonardi, Emile, 4,322,197, Cl. 414-206.000.

Ragen Precision Industries, Inc.: *See*—
Lopata, Ira, 4,322,155, Cl. 355-3.00R.

Raghava, Ram S., to Formica Corporation. Abrasion-resistant decorative laminates. 4,322,468, Cl. 428-204.000.

Rambausek, Hugo: *See*—
Jeschke, Willi; Rambausek, Hugo; and Schilling, Paul, 4,321,869, Cl. 101-136.000.

Ramesohl, Leo: *See*—
Bertram, Hans; and Ramesohl, Leo, 4,322,076, Cl. 273-73.00D.

Ramseier, Roland, to Widmer & Ernst AG. Apparatus for treating nuts or the like. 4,321,865, Cl. 99-576.000.

Randall, Harvey G.: *See*—
Daniels, Herbert E.; and Randall, Harvey G., 4,322,625, Cl. 250-409.000.

Randolph, Richard C. Recording device for golfer. 4,322,610, Cl. 235-114.000.

Ransom, Maurice N.: *See*—
Beuscher, Hugo J.; Davis, John H.; Ransom, Maurice N.; and Walford, Robert B., 4,322,843, Cl. 370-63.000.

Rao, Bhaskara M. L.; and Weiss, Robert A., to Exxon Research & Engineering Co. Composition for chalcogenide electrodes. 4,322,317, Cl. 252-520.000.

Raphael, Thomas; and Shulman, Joseph, to Polaroid Corporation. ID Card laminar structures and a method for preparation thereof using a transfered adhesive. 4,322,461, Cl. 428-14.000.

Rapp, Erich: *See*—
Klemm, Kurt; Kruger, Uwe; Rapp, Erich; Wolf, Horst; and Kraas, Ekkehard, 4,322,439, Cl. 424-319.000.

Rasberger, Michael, to Ciba-Geigy Corporation. 6-Amino-dibenz[d,g][1,3,2]dioxaphosphocines. 4,322,527, Cl. 544-157.000.

Ratzlaff, Howard J.: *See*—
Holdeman, Adin F.; Gaeddert, Melvin V.; Ratzlaff, Howard J.; Pruitt, Martin E.; and Lohrentz, Howard R., 4,321,787, Cl. 56-341.000.

Ray, Claude: *See*—
Schaeren, Walter; and Ray, Claude, 4,322,834, Cl. 368-296.000.

Ray, Glen; and Gollhardt, James B., to Allen-Bradley Company. Permanent magnet motor armature. 4,322,648, Cl. 310-156.000.

Raychem Limited: *See*—
Skipper, Richard S., 4,322,575, Cl. 174-120.0SR.

Raymond Corporation, The: *See*—
Taylor, Charles L., 4,322,670, Cl. 318-587.000.

RCA Corporation: *See*—
Dischert, Robert A.; and Walter, James M., 4,322,747, Cl. 358-127.000.
Malchow, Max E., 4,322,691, Cl. 330-301.000.
Martin, John G., 4,322,592, Cl. 219-10.49R.
Opresko, Stephen T., 4,322,277, Cl. 204-192.00R.
Pankove, Jacques I.; and Wu, Chung P., 4,322,253, Cl. 148-1.500.
Preslar, Donald R., 4,322,643, Cl. 307-528.000.

Sendelweck, GeneK., 4,322,770, Cl. 361-91.000.
Ziegel, Douglas H., 4,321,772, Cl. 51-109.00R.
RCA, Inc.: *See—*
Cardinal, Rene E., 4,322,599, Cl. 219-119.000.
Reba, Imants, to Crown Zellerbach Corporation. Filament draw nozzle. 4,322,027, Cl. 226-97.000.
Rebish, Edward J.; Capuano, Terry D.; and Barkocy, John L., to Russell, Burdsall & Ward Corporation. Lug nut. 4,322,195, Cl. 411-431.000.
Red Valve Company, Inc.: *See—*
Campbell, James A., 4,322,054, Cl. 251-5.000.
Redlich, Horst: *See—*
Borchard, Heinz; and Redlich, Horst, 4,322,841, Cl. 369-270.000.
Redwine, Donald J., to Texas Instruments Incorporated. High speed serial shift register for MOS integrated circuit. 4,322,635, Cl. 307-221.00C.
Reece, Carl L.; and Reece, Gloria J. Golfer's stance training device. 4,322,084, Cl. 273-187.00R.
Reece, Gloria J.: *See—*
Reece, Carl L.; and Reece, Gloria J., 4,322,084, Cl. 273-187.00R.
Reed, Robert S. Prevention of freeze damage to liquid conduits. 4,321,908, Cl. 126-420.000.
Regie Nationale des Usines Renault: *See—*
Provensal, Jacques, 4,322,097, Cl. 280-808.000.
Rehn, Larry A.: *See—*
Tarpley, Roy W.; Rehn, Larry A.; and Davis, Paul H., 4,321,825, Cl. 73-204.000.
Reichl, Richard: *See—*
Losel, Walter; Esser, Franz; Roos, Otto; Reichl, Richard; Kuhn, Franz J.; and Traunecker, Werner, 4,322,418, Cl. 424-248.570.
Reinehr, Dieter: *See—*
Bader, Rolf; and Reinehr, Dieter, 4,322,536, Cl. 546-314.000.
Reiner, Roland; KiBing, Wolfgang; Doring, Helga; Koster-Losche, Kari; and Heide, Helmut, to Battelle Institut e.V. Implantable drug depot and process for the production thereof. 4,322,398, Cl. 424-19.000.
Reinke, Friedrich; and Hoever, Paul, to FRIED. KRUPP Gesellschaft mit beschrankter Haftung. Machine stepper. 4,321,976, Cl. 180-8.00C.
Reinke, Theodore S.: *See—*
Tolley, Calvert B.; Reinke, Theodore S.; and Brooks, John C., 4,321,730, Cl. 17-71.000.
Reiprich, Sieghard: *See—*
Bader, Dietrich; and Reiprich, Sieghard, 4,322,653, Cl. 313-55.000.
Reiten, Stanley V.: *See—*
Trussler, Ronald C.; Reiten, Stanley V.; and Wyeth, William A., 4,322,668, Cl. 318-434.000.
Rempfler, Hermann: *See—*
Pissiotas, Georg; and Rempfler, Hermann, 4,322,241, Cl. 71-94.000.
Renz, Klaus: *See—*
Becker, Michael; Renz, Klaus; and Weibelzahl, Manfred, 4,322,766, Cl. 361-17.000.
Research Corporation: *See—*
Wong, John L., 4,322,528, Cl. 544-338.000.
Research-Cottrell, Inc.: *See—*
Gleason, Robert J.; Richman, Mark; and Cooke, Paul E., 4,322,392, Cl. 423-242.000.
Gleason, Robert J.; and Sui, Chin T., 4,322,393, Cl. 423-242.000.
Resjo, Per-Arne; and Loid, Hans P., to Forenade Fabriksverken. Method and system for distinguishing between displacing targets and a surface of water. 4,322,826, Cl. 367-96.000.
Respiratory Care, Inc.: *See—*
Brisson, A. Glen, 4,322,594, Cl. 219-497.000.
Restarick, Henry L.; and Setterberg, John R., Jr., to Otis Engineering Corporation. Self-aligning well tool guide. 4,321,965, Cl. 166-117.500.
Reynolds, James M., to Zulauf Inc. Orthodontic appliance. 4,322,206, Cl. 433-9.000.
Rhodes, Alan: *See—*
Leslie, Stewart T.; Rhodes, Alan; Boroda, Cyril; and Halpern, Alfred, 4,322,433, Cl. 424-298.000.
Rhone-Poulenc Industries: *See—*
Desbois, Michel; and Soula, Gerard, 4,322,369, Cl. 260-465.400.
Machurat, Jean; Morawski, Jean-Claude; and Soula, Gerard, 4,322,336, Cl. 524-104.000.
Riches, Arthur J.; and Wallace, Robert D., to Bunker Ramo Corporation. Screw-coupled electrical connectors. 4,322,121, Cl. 339-89.00M.
Richman, Mark: *See—*
Gleason, Robert J.; Richman, Mark; and Cooke, Paul E., 4,322,392, Cl. 423-242.000.
Rickert, Glenn E. Bright picture projection including three dimensional projection. 4,322,743, Cl. 358-88.000.
Ricoh Company, Ltd.: *See—*
Ebi, Yutaka; Ohori, Tamio; Matsumoto, Fuyuhiko; and Tomita, Satoru, 4,322,734, Cl. 346-153.100.
Furukawa, Tatsuya; and Kakeno, Sadao, 4,322,732, Cl. 346-75.000.
Miura, Shinji; and Aramaki, Kazuo, 4,322,157, Cl. 355-14.00C.
Ridenour, Ralph G. Tubing joint method of assembly. 4,321,743, Cl. 29-516.000.
Rieger, Hansjorg; and Weidler, Erhard, to RUD-Kettenfabrik Rieger & Dietz GmbH u. Co. Tire protector device. 4,321,955, Cl. 152-171.000.
Rilling, Hans. Plug-in connector with improved spring contact. 4,322,120, Cl. 339-47.00R.
Rilly, Gerard, to Thomson-Brandt. Switched-mode field-scanning circuit of video-frequency receiver. 4,322,663, Cl. 315-408.000.
Rimmeir, Paul. Tool used to facilitate deep fat frying. 4,321,859, Cl. 99-416.000.
Rinehart, William M., to A. B. Chance Company. Composition capable of removing hydrophilic and hydrophobic contaminants from surfaces. 4,322,309, Cl. 252-171.000.
Rioult, Jean-Pierre; and Fabien, Raymond, to U.S. Philips Corporation. Method for selective etching of titaniumdioxide relative to aluminum. 4,322,264, Cl. 156-655.000.
Ripamonti, Maria C.: *See—*
Cassinelli, Giuseppe; Forenza, Salvatore; Ripamonti, Maria C.; and Ruggieri, Daniela, 4,322,412, Cl. 424-180.000.
Risebury, John F., to Imperial Chemical Industries Limited. Oxidation process. 4,322,558, Cl. 568-359.000.
RJD: *See—*
Knox, Ronald W., 4,322,292, Cl. 210-198.100.
Roach, Stanley G. Adjustable bracket for a decorator rod. 4,322,050, Cl. 248-222.200.
Robert Bosch GmbH: *See—*
Latsch, Reinhard, 4,321,898, Cl. 123-254.000.
Zabler, Erich; and Wolf, Konrad, 4,322,727, Cl. 340-870.350.
Roberts, James L.: *See—*
Baxter, John D.; Roberts, James L.; Seeburg, Peter H.; Goodman, Howard M.; and Shine, John, 4,322,499, Cl. 435-317.000.
Robertson, David, to Displayco. Display stacker with biased pivoted trays. 4,322,005, Cl. 211-49.00S.
Robertson, Forrest E.; and Williams, Donald E., to Acra Plant, Inc. Seed planter furrow opener and follower therefor. 4,321,972, Cl. 172-721.000.
Rockwell International Corporation: *See—*
Runyan, Wesley G., 4,321,832, Cl. 73-708.000.
Rody, Jean, to Ciba-Geigy Corporation. Novel polyalkylpiperidine derivatives of s-triazines as stabilizers. 4,322,337, Cl. 524-100.000.
Rog, Joseph W.; Nicholas, Karl W.; and Waits, Charles G., to Harco Corporation. Electrical survey method and apparatus. 4,322,805, Cl. 364-481.000.
Roge, Ralph R. Insertion detecting probe and electrolysis system. 4,321,926, Cl. 128-303.180.
Rogers, Arthur J., Jr.; and Beardsley, Marilyn J. Cable and conduit shield. 4,321,726, Cl. 16-2.000.
Rogers Corporation: *See—*
Burns, Jack L.; and Forte, Link, 4,322,587, Cl. 200-5.00R.
Rohm and Haas Company: *See—*
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,322,475, Cl. 428-411.000.
Machleder, Warren H.; and Bollinger, Joseph M., 4,322,220, Cl. 44-75.000.
Rohner, Joachim, to W. Schlafhorst & Co. Apparatus for extending a warp fed to a tufting machine. 4,321,736, Cl. 28-210.000.
Rollmann, Kent W., to Phillips Petroleum Co. Polyphenylene oxide/-rubber blending. 4,322,506, Cl. 525-92.000.
Rolls-Royce Limited: *See—*
Briggs, Jack, 4,322,117, Cl. 308-233.000.
Etheridge, Colin J., 4,321,794, Cl. 60-743.000.
Roloff, Achim; and Farooq, Saleem, to Ciba-Geigy Corporation. Cyclopropanecarboxylic acid alkynyl esters, processes for producing them, and their use as pesticides. 4,322,432, Cl. 424-275.000.
Roos, Otto: *See—*
Losel, Walter; Esser, Franz; Roos, Otto; Reichl, Richard; Kuhn, Franz J.; and Traunecker, Werner, 4,322,418, Cl. 424-248.570.
Rosemount Inc.: *See—*
Anderson, Harry V., 4,321,827, Cl. 73-343.00R.
Rosenberger, Siegfried, to Ciba-Geigy Corporation. Dithiophosphate stabilizers. 4,322,303, Cl. 252-46.600.
Rossi, Ugo W.: *See—*
Antonini, Atus; and Rossi, Ugo W., 4,322,850, Cl. 375-81.000.
Roth, Alfred H., to General Electric Co. Spray absorber control system and method. 4,322,224, Cl. 55-20.000.
Roth, Kurt: *See—*
Tappe, Horst; Kindler, Horst; Roth, Kurt; and Ong, Sien L., 4,322,213, Cl. 8-449.000.
Rouillard, Jean M. R.: *See—*
Bacquie, Serge B.; and Rouillard, Jean M. R., 4,321,855, Cl. 91-436.000.
Rovnyak, George C., to E. R. Squibb & Sons, Inc. Dihydropyrazole-5-carboxylic acid and analogs. 4,322,541, Cl. 548-379.000.
RUD-Kettenfabrik Rieger & Dietz GmbH u. Co.: *See—*
Rieger, Hansjorg; and Weidler, Erhard, 4,321,955, Cl. 152-171.000.
Ruggieri, Daniela: *See—*
Cassinelli, Giuseppe; Forenza, Salvatore; Ripamonti, Maria C.; and Ruggieri, Daniela, 4,322,412, Cl. 424-180.000.
Runyan, Wesley G., to Rockwell International Corporation. High accuracy measuring apparatus. 4,321,832, Cl. 73-708.000.
Ruonavaara, Quentin F.: *See—*
Howe, Rodney R.; and Ruonavaara, Quentin F., 4,322,460, Cl. 427-426.000.
Ruppa, Juhani. Safety flag attachment means for bicycles, etc. 4,321,883, Cl. 116-35.00A.
Russell, Burdsall & Ward Corporation: *See—*
Rebish, Edward J.; Capuano, Terry D.; and Barkocy, John L., 4,322,195, Cl. 411-431.000.
Rutter, Christopher C. Fluid dispenser. 4,322,018, Cl. 222-83.000.
Rutzen, John P.: *See—*
Piper, Phillip G.; and Rutzen, John P., 4,322,279, Cl. 204-195.00B.
RWC Inc.: *See—*
Blair, Robert H., 4,322,598, Cl. 219-107.000.
Rybolt, Thomas R.: *See—*
Pierotti, Robert A.; and Rybolt, Thomas R., 4,321,799, Cl. 62-112.000.

Ryder, Harold W.: *See*—
Debiase, Bennet W.; Ryder, Harold W.; Silvestri, Pasquale; and Whalen, John M., 4,322,060, Cl. 266-89.000.
Rymarchyk, Nicholas M.; and Meinert, Leo L., to Pullman Berry Company. Lance and method for removing skulls from steelmaking vessels. 4,322,033, Cl. 239-132.300.
Ryuichi Sato: *See*—
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,322,402, Cl. 424-78.000.
SAB Industri AB: *See*—
Severinsson, Lars M.; and Segersten, Ragnar, 4,321,985, Cl. 188-195.000.
Sadakane, Hirofumi: *See*—
Kawasaki, Masami; and Sadakane, Hirofumi, 4,321,783, Cl. 56-15.800.
Sadamasa, Tetsuo; and Ichikawa, Osamu, to Tokyo Shibaura Denki Kabushiki Kaisha. Display device. 4,322,735, Cl. 357-17.000.
Saeki, Yoshifumi; and Onda, Kazuyoshi, to Pioneer Electronic Corporation. Television signal scrambling method for CATV system. 4,322,745, Cl. 358-123.000.
Saigo, Masanori: *See*—
Nakahara, Yoshihiko; Tsujii, Norihiro; Nakanishi, Kenichi; Sakai, Yuji; and Saigo, Masanori, 4,321,816, Cl. 72-267.000.
Sakai, Kiyoshi: *See*—
Kojima, Koichi; Sakai, Kiyoshi; and Kobayashi, Shinsaku, 4,322,435, Cl. 424-305.000.
Sakai, Yuji: *See*—
Nakahara, Yoshihiko; Tsujii, Norihiro; Nakanishi, Kenichi; Sakai, Yuji; and Saigo, Masanori, 4,321,816, Cl. 72-267.000.
Sakamoto, Shigetoshi, to Hoshizaki Electric Co., Ltd. Ice and water-making refrigeration apparatus. 4,321,802, Cl. 62-330.000.
Sakaue, Tatsuo; Iida, Tetsuya; and Sato, Chikara, to Tokyo Shibaura Denki Kabushiki Kaisha. Weighting voltage supply circuit for a transversal filter. 4,322,696, Cl. 333-165.000.
Sallersbeck, Konrad: *See*—
Deubzer, Bernward; Burkhardt, Jurgen; Brunner, Erich; and Sallersbeck, Konrad, 4,322,517, Cl. 528-14.000.
Sallmann, Alfred; and Baschang, Gerhard, to Ciba-Geigy Corporation. Novel substituted phenylacetic acid amide compounds. 4,322,436, Cl. 424-309.000.
Sallmann, Alfred: *See*—
Habicht, Ernst; Ferrini, Pier G.; and Sallmann, Alfred, 4,322,431, Cl. 424-273.00B.
Samrowski, Dietrich: *See*—
Hafner, Walter; Markl, Erich; Eibel, Ludwig; Kreis, Gerhard; Samrowski, Dietrich; Wick, Manfred; Deubzer, Bernward; and Friedrich, Wilhelm, 4,322,473, Cl. 428-391.000.
Samuels, James C. Snow removal device for vehicles. 4,321,724, Cl. 15-245.000.
Samuels, Stanley: *See*—
Fish, Irving; Schwartz, Stephen A.; and Samuels, Stanley, 4,322,440, Cl. 424-319.000.
Sancken, Ernest H.; and Silverthorn, Charlie R., to A. O. Smith Harvestore Products, Inc. Cleated belt forage conveyor. 4,321,996, Cl. 198-499.000.
Sander, Jurgen; and Horn, Klaus, to Hoechst Aktiengesellschaft. Mixture which is polymerizable by radiation, and radiation-sensitive copying material prepared therewith. 4,322,491, Cl. 430-286.000.
Sandoz Ltd.: *See*—
Ascher, Gerd, 4,322,526, Cl. 544-030.000.
Berthold, Richard; and Payne, Trevor G., 4,322,437, Cl. 424-316.000.
Sandvik Aktiebolag: *See*—
Ander, Ken G.; and Sandvik Aktiebolag, 4,322,190, Cl. 409-234.000.
Sankyo Company Limited: *See*—
Kobayashi, Shinsaku; Kamoshita, Katsuo; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Takashi; and Kojima, Mikio, 4,322,420, Cl. 424-251.000.
Kojima, Koichi; Sakai, Kiyoshi; and Kobayashi, Shinsaku, 4,322,435, Cl. 424-305.000.
Sartorius, Wilfried, to Endress u. Hauser GmbH u. Co. Method and arrangement for pulse spacing measurement. 4,322,832, Cl. 368-47.000.
Sasaki, Isao; Hotta, Nobuaki; and Tsujide, Tohru, to Nippon Electric Co., Ltd. Short-resistant connection of polysilicon to diffusion. 4,322,736, Cl. 357-59.000.
Sass, Allan, to Occidental Petroleum Corporation. Process for the gasification of carbonaceous materials. 4,322,222, Cl. 48-197.00R.
Sato, Akira: *See*—
Hirata, Tadashi; Sato, Akira; and Nakamizo, Nobuhiro, 4,322,345, Cl. 260-239.00A.
Sato, Chikara: *See*—
Sakaue, Tatsuo; Iida, Tetsuya; and Sato, Chikara, 4,322,696, Cl. 333-165.000.
Sato, Kazuo: *See*—
Takemoto, Iwao; Nagahara, Shusaku; Fujita, Tsutomu; and Sato, Kazuo, 4,322,740, Cl. 358-44.000.
Sato, Koji: *See*—
Satoh, Mituo; Sato, Koji; and Kando, Toru, 4,322,152, Cl. 354-204.000.
Sato, Ryuichi: *See*—
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,322,402, Cl. 424-78.000.
Sato, Susumu: *See*—
Yasuda, Eturo; Sato, Susumu; Segawa, Yoshihiro; Hattori, Tadashi; and Aoki, Keiji, 4,322,383, Cl. 422-95.000.
Satoh, Hiroshi: *See*—
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,322,402, Cl. 424-78.000.
Satoh, Mituo; Sato, Koji; and Kando, Toru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electromagnetic release mechanism. 4,322,152, Cl. 354-204.000.
Satomoto, Atsushi: *See*—
Hashimoto, Nobuyuki; and Satomoto, Atsushi, 4,322,032, Cl. 236-48.00R.
Sauret, Jacques; and Grosse, Gerard, to Brink's France S.A. Composite pane having a high resistance to impacts. 4,321,777, Cl. 52-308.000.
Sayles, David C., to United States of America, Army. Inert gas generants for utilization with rocket motors. 4,322,035, Cl. 239-265.110.
Scala, Thomas L., Jr., to Finetex, Inc. Benzoic acid esters. 4,322,545, Cl. 560-103.000.
Schaal, Helmut: *See*—
Andersson, Kurt-Inge; Gjerstad, Victor; Gohl, Karl G.; Hallberg, Lars; Norstedt, Bertil; and Schaal, Helmut, 4,322,793, Cl. 364-200.000.
Schacht, Roy A. Half-spacing feed mechanism for marking machine. 4,322,173, Cl. 400-303.000.
Schadwill, Karl H., to Everett/Charles Inc. Vacuum actuated test head having programming plate. 4,322,682, Cl. 324-158.00F.
Schaeren, Walter; and Ray, Claude, to General Watch Co. Ltd. Watch case with interengaging flanged glass and flanged casing ring. 4,322,834, Cl. 368-296.000.
Schenk-Filterbau Gesellschaft mit beschrankter Haftung: *See*—
Brokhage, Josef, 4,322,295, Cl. 210-331.000.
Heess, Emil; Hums, Norbert; and Krug, Kurt, 4,322,446, Cl. 426-330.400.
Schenk, Klaus-Dirk: *See*—
Gauri, Kailash K.; Pressler, Klaus; and Schenk, Klaus-Dirk, 4,322,404, Cl. 424-89.000.
Schering Aktiengesellschaft: *See*—
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; and Wiechert, Rudolf, 4,322,349, Cl. 260-239.55R.
Schering Corporation: *See*—
Neustadt, Bernard R.; and Gold, Elijah H., 4,322,434, Cl. 424-304.000.
Schick, Karl G.: *See*—
Huber, Calvin O.; Schick, Karl G.; and Coburn, Joel T., 4,322,215, Cl. 23-230.00R.
Schiffers, Ulrich: *See*—
Frewer, Hans; Muller, Rainer; and Schiffers, Ulrich, 4,322,243, Cl. 75-34.000.
Schiller, Michael, to Fingermatrix Inc. Finger identification. 4,322,163, Cl. 356-71.000.
Schilling, Paul: *See*—
Jeschke, Willi; Rambausek, Hugo; and Schilling, Paul, 4,321,869, Cl. 101-136.000.
Schiminski, Herbert: *See*—
Dammann, Peter; Schippers, Heinz; Turk, Herbert; and Schiminski, Herbert, 4,321,789, Cl. 57-224.000.
Schippers, Heinz: *See*—
Dammann, Peter; Schippers, Heinz; Turk, Herbert; and Schiminski, Herbert, 4,321,789, Cl. 57-224.000.
Schlotzhauer, Kenneth G.; and Metz, Arthur J., to Tektronix, Inc. Cascode feed-forward amplifier. 4,322,688, Cl. 330-252.000.
Schmid, Bruce K., to Gulf Oil Corporation. Integrated coal liquefaction-gasification plant. 4,322,389, Cl. 422-187.000.
Schmidt, Erwin: *See*—
Jensen, Harald; Schmidt, Erwin; Mitzlaff, Michael; Cramer, Jurgen; Pistorius, Rudolf; Pietsch, Hartmut; and Dehmer, Klaus, 4,322,271, Cl. 204-73.00R.
Schmidt, Gunther, to Parker Pen Company, The. Clamping closure for the releasable joining of the locking strip of cases, writing cases and the like. 4,322,099, Cl. 292-19.000.
Schmidt, H. Dean; and Eckstrom, Peter M., to Midland-Ross Corporation. Gasification furnace. 4,321,877, Cl. 110-186.000.
Schmidt, Manfred; Bottenbruch, Ludwig; Freitag, Dieter; and Nouvertne, Werner, to Bayer Aktiengesellschaft. Aromatic thermoplastic polyphosphonatocarbonate. 4,322,520, Cl. 528-167.000.
Schmidt, Manfred: *See*—
Feucht, Rudi; Schmidt, Manfred; and Biermann, Peter, 4,322,092, Cl. 280-615.000.
Freitag, Dieter; and Schmidt, Manfred, 4,322,373, Cl. 260-544.00K.
Schmidt Manufacturing, Inc.: *See*—
Thompson, Robert E.; and McNinney, Richard P., 4,322,058, Cl. 251-145.000.
Schmidt, Paul J.: *See*—
Crounse, Nathan N.; and Schmidt, Paul J., 4,322,352, Cl. 260-326.14R.
Schmidt, Willibald. Apparatus for sizing particulate material. 4,322,288, Cl. 209-356.000.
Schmilovitz, Zeev: *See*—
Zaltzman, Arthur; Mizrach, Amos; and Schmilovitz, Zeev, 4,322,287, Cl. 209-44.000.
Schneider, Claus; Weber, Karl-Heinz; Langbein, Adolf; Bechtel, Wolf D.; and Boke, Karin, to Boehringer Ingelheim GmbH. 4-Phenyl-4,5,6,7-tetrahydro-thieno(2,3-C)pyridines and salts thereof. 4,322,423, Cl. 424-256.000.
Schneider, Ira. Drinking container. 4,322,008, Cl. 215-1.00R.

Schobler, Werner: *See*—
Heinemann, Otto; Lucke, Helmut; Schobler, Werner; Heiringhoff, Burkhard; and Krumme, Helmut, 4,322,116, Cl. 308-9.000.
Schoen, Donald W.; and Klug, Jerry J., to Donaldson Company, Inc. Unitized gas-particulate filter and housing. 4,322,230, Cl. 55-316.000.
Schoeneberger, Carl F.: *See*—
Bundens, Allan B.; and Schoeneberger, Carl F., 4,322,854, Cl. 455-5.000.
Scholten, John J.; and Young, James C., to General Filter Company. Method of simultaneous air-water wash of multiple-media filters. 4,322,299, Cl. 210-794.000.
Schranz, Karl W.: *See*—
Kunitz, Friedrich-Wilhelm; Puschel, Walter; and Schranz, Karl W., 4,322,492, Cl. 430-375.000.
Schreiber, Stuart L., to President and Fellows of Harvard College. Tertiary amine oxidation and products thereof. 4,322,537, Cl. 546-315.000.
Schroder, Ernst, to Licentia Patent-Verwaltungs-G.m.b.H. Circuit system for the generation of a direct control voltage dependent upon an alternating voltage. 4,322,636, Cl. 307-246.000.
Schroll, Craig R.: *See*—
Bushnell, Calvin L.; Bregoli, Lawrence J.; and Schroll, Craig R., 4,322,482, Cl. 429-41.000.
Schucht, Peter, to Siemens Aktiengesellschaft. High frequency pulse amplifier. 4,322,689, Cl. 330-285.000.
Schuller, Marius C.; and Harris, Leslie J., to Fiberglas Canada Inc. Method of and apparatus for winding roving packages. 4,322,041, Cl. 242-42.000.
Schulthess, Adrian; and Farine, Jean-Claude, to Laboratoires OM Societe Anonyme. Method for treating rheumatoid arthritis. 4,322,405, Cl. 424-93.000.
Schulze, Stephen R.: *See*—
Tuller, Harold W.; Schulze, Stephen R.; and Wilson, George S., 4,322,480, Cl. 428-476.100.
Schutzer, Gerhard, to Gustav F. Gerdts KG. Check valve. 4,321,944, Cl. 137-512.100.
Schwab, Max; Heinen, Peter; Diederichs, Willi; Gossens, Peter; Ohloff, Fritz-Gunter; and Minkenberg, Hubert, to Akzo, N.V. Process for the production of drawing die bores. 4,321,843, Cl. 76-107.00A.
Schwartz, Edwin L.; and Langan, Allan W. Cigarette lighter plug assembly. 4,322,122, Cl. 339-147.00P.
Schwartz, Stephen A.: *See*—
Fish, Irving; Schwartz, Stephen A.; and Samuels, Stanley, 4,322,440, Cl. 424-319.000.
Schwenninger, Ronald L., to PPG Industries, Inc. Float glass forming chamber with horizontal heating elements. 4,322,235, Cl. 65-182.300.
Schwuchow, Brian P. Snowman hat-kit. 4,322,004, Cl. 206-575.000.
Scott & Fetzer Company, The: *See*—
Neroda, Thomas H.; Flaherty, George A.; and Evans, David L., 4,322,647, Cl. 310-71.000.
Scott, Larkin B.: *See*—
Chamran, Morteza M.; Scott, Larkin B.; and Williams, Paul B., 4,322,807, Cl. 364-498.000.
Scott Paper Company: *See*—
Gray, Lorin S., III; Mattor, John A.; Millard, Ben; and Ward, Franklin J., 4,322,450, Cl. 427-44.000.
Sea Savory, Inc.: *See*—
Tolley, Calvert B.; Reinke, Theodore S.; and Brooks, John C., 4,321,730, Cl. 17-71.000.
Seeburg, Peter H.: *See*—
Baxter, John D.; Roberts, James L.; Seeburg, Peter H.; Goodman, Howard M.; and Shine, John, 4,322,499, Cl. 435-317.000.
Segawa, Yoshihiro: *See*—
Yasuda, Eturo; Sato, Susumu; Segawa, Yoshihiro; Hattori, Tadashi; and Aoki, Keiji, 4,322,383, Cl. 422-95.000.
Segersten, Ragnar: *See*—
Severinsson, Lars M.; and Segersten, Ragnar, 4,321,985, Cl. 188-195.000.
Segrest, William W. Secondary hearth crematory. 4,321,878, Cl. 110-194.000.
Sekine, Kazuo: *See*—
Ikeda, Hiroharu; Shimozato, Yasuyuki; and Sekine, Kazuo, 4,322,319, Cl. 525-194.000.
Selleck, James E.: *See*—
Pricer, Wilbur D.; and Selleck, James E., 4,322,823, Cl. 365-184.000.
Selmin, Paolo, to Society AP Selmin SAS of Massimo Coltelli & Co. Method and devices for the omnidirectional radiation of sound waves. 4,322,578, Cl. 179-1.00E.
Sendelweck, GeneK., to RCA Corporation. Latch-up prevention circuit for power output devices using inductive loads. 4,322,770, Cl. 361-91.000.
Sensi, John E., to PPG Industries, Inc. Float glass forming chamber having low profile roof. 4,322,236, Cl. 65-182.500.
Serlin, Richard A. Surface alloying method and apparatus using high energy beam. 4,322,601, Cl. 219-121.0LE.
Serra, Felipe S., to Boerman, Luis F. Segarra. Sofa bed. 4,321,717, Cl. 5-26.00D.
Setterberg, John R., Jr.: *See*—
Restarick, Henry L.; and Setterberg, John R., Jr., 4,321,965, Cl. 166-117.500.
Severinsson, Lars M.; and Segersten, Ragnar, to SAB Industri AB. Change-over valve, preferably for a railway vehicle. 4,321,985, Cl. 188-195.000.
Shaeffer, Raymond P.: *See*—
Athey, Stuart E.; Johnson, Thomas M.; and Shaeffer, Raymond P., 4,321,849, Cl. 83-816.000.
Shah, Niranjan V., to Goodyear Tire & Rubber Company, The. Process for preparing aromatic amide antioxidants. 4,322,551, Cl. 564-137.000.
Shanks, Bruce E.; and Campbell, Dan R., to General Electric Company. Vehicle headlamp having an integrally molded trim reference plane. 4,322,784, Cl. 362-306.000.
Sharp Kabushiki Kaisha: *See*—
Morihisa, Mitsuo, 4,322,694, Cl. 331-116.0FE.
Uede, Hisashi; Yano, Kohzo; Hamada, Hiroshi; Nakauchi, Hiroshi; and Inami, Yasuhiko, 4,322,133, Cl. 350-357.000.
Shaw, Robert F.; and Sperinde, John M., to Oximetrix, Inc. Sterilizable, disposable optical scattering reference medium and container assembly. 4,322,164, Cl. 356-243.000.
Shaw, Trevor W.: *See*—
Fowell, Alan; Shaw, Trevor W.; and Crookall, John R., 4,322,595, Cl. 219-69.00C.
Shay, Gregory D., to Sherwin-Williams Company, The. Radiation polymerizable compounds and conductive coatings from same. 4,322,331, Cl. 524-815.000.
Sheiman, Julius: *See*—
Sheiman, Samuel R.; and Sheiman, Julius, 4,321,727, Cl. 16-18.00R.
Sheiman, Samuel R.; and Sheiman, Julius. Luggage roller. 4,321,727, Cl. 16-18.00R.
Shell Oil Company: *See*—
Chatterjee, Ananda M., 4,322,503, Cl. 524-229.000.
Dante, Mark F., 4,322,321, Cl. 523-454.000.
Nozaki, Kenzie, 4,322,218, Cl. 44-1.0SR.
Shepard, John S. Shelf bracket assembly. 4,322,051, Cl. 248-235.000.
Shepherd, Charles D.: *See*—
Hardin, Leonard J.; and Shepherd, Charles D., 4,322,388, Cl. 422-177.000.
Sherwin-Williams Company, The: *See*—
Shay, Gregory D., 4,322,331, Cl. 524-815.000.
Shibaoka, Haruo; and Hayashi, Katsumi, to Fuji Photo Film Co., Ltd. Reversal processing methods for black and white photographic light-sensitive materials. 4,322,493, Cl. 430-407.000.
Shimada, Kunihiko; and Tsuchiya, Yukio, to Pioneer Electronic Corporation. Voice coil bobbin for planar diaphragm. 4,322,584, Cl. 179-115.5VC.
Shimano Industrial Company, Limited: *See*—
Shimano, Keizo, 4,322,209, Cl. 474-82.000.
Shimano, Keizo, to Shimano Industrial Company, Limited. Derailleur with improved mechanism for moving and retaining a movable member to and in a desired speed change stage. 4,322,209, Cl. 474-82.000.
Shimizu, Masami; Uchidoi, Masanori; Date, Nebuaki; and Aizawa, Hiroshi, to Canon Kabushiki Kaisha. Camera having a sound-making element. 4,322,146, Cl. 354-60.00E.
Shimogawa, Toshiaki: *See*—
Tanaka, Katsuyuki; Kuwakado, Satosi; Tsuge, Noboru; and Shimogawa, Toshiaki, 4,322,046, Cl. 242-107.40A.
Shimozato, Yasuyuki: *See*—
Ikeda, Hiroharu; Shimozato, Yasuyuki; and Sekine, Kazuo, 4,322,319, Cl. 525-194.000.
Shin-Etsu Chemical Co. Ltd.: *See*—
Onda, Yoshiro; Muto, Hiroaki; and Suzuki, Hiroshi, 4,322,524, Cl. 536-55.000.
Shine, John: *See*—
Baxter, John D.; Roberts, James L.; Seeburg, Peter H.; Goodman, Howard M.; and Shine, John, 4,322,499, Cl. 435-317.000.
Shinkai, Kinya: *See*—
Yoshida, Susumu; Ishigaki, Yoshio; and Shinkai, Kinya, 4,322,742, Cl. 358-65.000.
Shintomi Golf Co., Ltd.: *See*—
Imai, Sigeru, 4,322,083, Cl. 273-167.00F.
Shoffner, James P.: *See*—
Van Til, Alan E.; and Shoffner, James P., 4,322,254, Cl. 148-6.14R.
Showa Line Ltd.: *See*—
Kurasawa, Jiro, 4,321,905, Cl. 123-575.000.
Shrock, Fred J. Convertible seat-bed. 4,321,716, Cl. 5-18.00R.
Shugart, Edward S. Stackable box book shelves. 4,322,118, Cl. 312-111.000.
Shulman, Joseph: *See*—
Raphael, Thomas; and Shulman, Joseph, 4,322,461, Cl. 428-14.000.
Shuman, Robert T.; and Gesellchen, Paul D., to Eli Lilly and Company. Pharmacologically active peptides. 4,322,340, Cl. 260-112.50E.
Shuman, Robert T.: *See*—
Gesellchen, Paul D.; and Shuman, Robert T., 4,322,339, Cl. 260-112.50E.
Smithwick, Edward L., Jr.; Frederickson, Robert C. A.; and Shuman, Robert T., 4,322,342, Cl. 260-112.50E.
Shuster, Heinrich: *See*—
Beitler, Franz; Maryschka, Gerhard; and Shuster, Heinrich, 4,322,761, Cl. 360-85.000.
Siebmanns, Wilhelm, to Motoren-und Turbinen Union. Molded ceramic member, particularly of silicon ceramic, and method for the manufacture thereof. 4,322,458, Cl. 427-331.000.
Siemens Aktiengesellschaft: *See*—
Becker, Michael; Renz, Klaus; and Weibelzahl, Manfred, 4,322,766, Cl. 361-17.000.
Bosch, Werner, 4,322,702, Cl. 335-202.000.
Elmqvist, Hakan, 4,321,928, Cl. 128-419.0PG.
Honold, Peter; and Wagner, Gerhard, 4,322,729, Cl. 343-6.50R.

Houska, Karl H.; Floegel, Lothar; Hauck, Joachim; Hosten, Daniel; Denys, Wilfried; Boone, Luc; and De Vogelaere, Marc, 4,322,280, Cl. 204-207.000.
Huber, Wilhelm; Mammach, Peter; and Weingand, Kaspar, 4,322,656, Cl. 313-485.000.
Krausse, Jurgen; and Ladenhauf, Wilhelm, 4,322,452, Cl. 427-82.000.
Schucht, Peter, 4,322,689, Cl. 330-285.000.
Spirk, Franz; and Vandamme, Detlef, 4,322,645, Cl. 310-58.000.
Veith, Werner; and Walter, Karl-Heinz, 4,322,657, Cl. 313-485.000.

Sikorski, James A.: *See—*
Dutra, Gerard A.; and Sikorski, James A., 4,322,238, Cl. 71-86.000.
Dutra, Gerard A.; and Sikorski, James A., 4,322,239, Cl. 71-86.000.

Siller, Rudi, to Cillichemie Ernst Vogelman GmbH & Co. Dosing device. 4,321,938, Cl. 137-99.000.

Silverthorn, Charlie R.: *See—*
Sancken, Ernest H.; and Silverthorn, Charlie R., 4,321,996, Cl. 198-499.000.

Silvestri, Pasquale: *See—*
Debiase, Bennet W.; Ryder, Harold W.; Silvestri, Pasquale; and Whalen, John M., 4,322,060, Cl. 266-89.000.

Silvis, Salvatore J., to Colgate-Palmolive Company. Deoiling of aqueous solutions of sodium lauryl sulfate. 4,322,367, Cl. 260-459.00R.

Simcoe, Kent W.: *See—*
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,322,816, Cl. 364-900.000.

Simmons, Darrell G.: *See—*
Simmons, Mark T.; and Simmons, Darrell G., 4,322,110, Cl. 297-174.000.

Simmons, Mark T.; and Simmons, Darrell G. Infant seat for tables. 4,322,110, Cl. 297-174.000.

Simplex Time Recorder Co.: *See—*
Peterson, Ronald H., 4,322,831, Cl. 368-46.000.

Singer Company, The: *See—*
Collier, Albert F.; and Peters, David L., 4,322,726, Cl. 340-705.000.
Peterson, Wesley R., 4,322,781, Cl. 362-32.000.

Sisk, Francis J., to Westinghouse Electric Corp. Apparatus for separating entrained liquid from a liquid gas mixture. 4,322,233, Cl. 55-426.000.

Six, Jean-Claude G.: *See—*
Kaire, Jean-Claude; and Six, Jean-Claude G., 4,322,634, Cl. 307-200.00A.

Skala, Stephen F. Process for depleting an impurity by electrolysis and recovering electrical energy from its decomposition products. 4,322,270, Cl. 204-68.000.

Skega Aktiebolag: *See—*
Hurst, George P.; and Svensson, Assar N., 4,321,742, Cl. 29-445.000.

Skipper, Richard S., to Raychem Limited. Flame retardant compositions. 4,322,575, Cl. 174-120.0SR.

Slavik, William H.; and Moravec, John V., to Nuvatec/Inc. Electronic game apparatus. 4,322,073, Cl. 273-16.00C.

Slingsby, Barry: *See—*
Christain, Ronald W.; and Slingsby, Barry, 4,322,581, Cl. 179-18.0ES.

Sliwa, John W., Jr., to Intel Corporation. Integrated circuit micropackaging. 4,322,737, Cl. 357-82.000.

Sloan, Donald A.; and Perkins, Carroll G., to Consolidated Foods Corporation. Ticket reader. 4,322,614, Cl. 235-458.000.

Sluys, Wesley W., to Builders Concrete, Inc. Interconnecting system for marine floats. 4,321,882, Cl. 114-266.000.

Smeby, Jane M.: *See—*
McHenry, Kelly D.; Smeby, Jane M.; and Michelson, Robert H., 4,322,395, Cl. 423-412.000.

Smith, Hayden N., to Addison Products Company. Multiple air passage condenser. 4,321,803, Cl. 62-507.000.

Smith, Randel P., to Steiner Corporation. Fluid injection pouch and dispensing system incorporating the same. 4,322,019, Cl. 222-83.500.

Smith, Thane: *See—*
Fleming, Paul L.; and Smith, Thane, 4,322,695, Cl. 333-104.000.

Smithwick, Edward L., Jr.; Frederickson, Robert C. A.; and Shuman, Robert T., to Eli Lilly and Company. Analgesic compounds. 4,322,342, Cl. 260-112.50E.

Snap-on Tools Corporation: *See—*
Henning, Gary S., 4,322,247, Cl. 75-128.00F.
Henning, Gary S., 4,322,256, Cl. 148-36.000.

Snyder, Delmer E., to Tektronix, Inc. Electromagnetic interference shielding device. 4,322,572, Cl. 174-35.00R.

Snyder, John S., Jr., to Communications Satellite Corporation. Reliability-weighted analog threshold decoder. 4,322,848, Cl. 371-43.000.

Sobel, Alan: *See—*
De Jule, Michael; Sobel, Alan; Meyer, Ralph L.; and Glaser, David, 4,322,659, Cl. 315-169.100.

Sobel, Martin. Pneumatic remote sensing apparatus. 4,322,590, Cl. 200-81.90R.

Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Antonini, Atus; and Rossi, Ugo W., 4,322,850, Cl. 375-81.000.

Societe Alsacienne de Constructions Mecaniques de Mulhouse: *See—*
Gadeix, Jean-Marie; and Wolf, Francois, 4,322,040, Cl. 242-18.0PW.

Societe Anonyme Automobiles Citroen: *See—*
Achard, Michel, 4,321,792, Cl. 60-276.000.

Societe Anonyme dite: Compagnie Generale d'Electricite: *See—*
Dubois, Pierre, 4,322,261, Cl. 156-280.000.

Societe J.G. Allinquant: *See—*
Bich, Rene, 4,321,988, Cl. 188-322.110.

Societe Suisse pour l'Industrie Horlogere Management Services S.A.: *See—*
Vuilleumier, Cyril, 4,321,839, Cl. 74-462.000.

Society AP Selmin SAS of Massimo Coltelli & Co.: *See—*
Selmin, Paolo, 4,322,578, Cl. 179-1.00E.

Soderberg, John H.; and Penque, Leonard M., to Pitney Bowes Inc. Electro-mechanical latch apparatus. 4,321,867, Cl. 101-91.000.

Solar Unlimited, Inc.: *See—*
Bowden, Donald R., 4,321,963, Cl. 165-70.000.

Solco Basel AG: *See—*
Laszczower, Max, 4,321,921, Cl. 128-276.000.

Solver, Carl E.: *See—*
Andersson, Erik; and Solver, Carl E., 4,322,591, Cl. 200-148.00A.

Song, Ki W., to Kyung Hwan Cheong. Liquid-sealed type of a governor for telephone dial. 4,322,582, Cl. 179-90.00R.

Sony Corporation: *See—*
Hatakeyama, Akira, 4,322,757, Cl. 360-14.000.
Hongu, Masayuki; Ohmuro, Shigeru; and Tokuhara, Masaharu, 4,322,751, Cl. 358-195.100.
Kusaka, Satoshi, 4,322,840, Cl. 369-220.000.
Maeda, Keijiro, 4,322,583, Cl. 179-115.5VC.
Menezes, William A.; and Kuper, Douglas D., 4,322,814, Cl. 364-900.000.
Mogi, Takao; Murakami, Shigetoshi; Okada, Hisao; and Ishigaki, Yoshio, 4,322,855, Cl. 455-151.000.
Nakamura, Takashi; and Chiba, Yoshio, 4,322,662, Cl. 315-383.000.
Yoshida, Susumu; Ishigaki, Yoshio; and Shinkai, Kinya, 4,322,742, Cl. 358-65.000.
Yoshida, Tadao, 4,322,788, Cl. 363-49.000.

Soobik, Lembit: *See—*
Bott, Friedrich; and Soobik, Lembit, 4,322,644, Cl. 307-571.000.

Sorenson, James A.: *See—*
Nelson, James A.; and Sorenson, James A., 4,322,619, Cl. 250-323.000.

Sorkin, Howard, to Timex Corporation. 5-Substituted-2-(4-cyanophenyl)-1,3,-dioxanes. 4,322,354, Cl. 260-340.700.

Soucy, Norman F. Magnetic calendar holder. 4,321,763, Cl. 40-120.000.

Soula, Gerard: *See—*
Desbois, Michel; and Soula, Gerard, 4,322,369, Cl. 260-465.400.
Machurat, Jean; Morawski, Jean-Claude; and Soula, Gerard, 4,322,336, Cl. 524-104.000.

Sourirajan, Srinivasa: *See—*
Matsuura, Takeshi; Blais, Pierre; Baxter, Arthur G.; and Sourirajan, Srinivasa, 4,322,448, Cl. 426-490.000.

Spademan, Richard G. Ski brake. 4,322,089, Cl. 280-605.000.

Spangler, Paul C.; and Spangler, Searle T., to Blackstone Industries, Inc. Foot pedal motor control. 4,322,711, Cl. 338-153.000.

Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., to Hewlett-Packard Company. Programmable calculator having structure for controlling an x-y plotter. 4,322,816, Cl. 364-900.000.

Spangler, Searle T.: *See—*
Spangler, Paul C.; and Spangler, Searle T., 4,322,711, Cl. 338-153.000.

Speed-Form Manufacturing Ltd.: *See—*
Kratchmer, James, 4,321,779, Cl. 52-425.000.

Sperinde, John M.: *See—*
Shaw, Robert F.; and Sperinde, John M., 4,322,164, Cl. 356-243.000.

Sperry Corporation: *See—*
Barnes, Richard M., 4,322,852, Cl. 375-94.000.

Spin Physics, Inc.: *See—*
Lemke, James U., 4,322,763, Cl. 360-115.000.

Spinner, Ulrich: *See—*
Menth, Anton; Nagel, Hartmut; and Spinner, Ulrich, 4,322,257, Cl. 148-101.000.

Spirk, Franz; and Vandamme, Detlef, to Siemens Aktiengesellschaft. Liquid-cooled electric machine. 4,322,645, Cl. 310-58.000.

Spivey, Paul R.: *See—*
Howard, Guy J.; Hubbard, James H.; McCrumb, Walter C.; and Spivey, Paul R., 4,322,813, Cl. 364-900.000.

SPOFA, spojene podniky pro zdravotnickou vyrobu: *See—*
Wichterle, Otto, 4,322,139, Cl. 351-160.00H.

Spofford, Walter R., to Emhart Industries, Inc. Implemental means for a touch control system. 4,322,631, Cl. 307-39.000.

Spranca, Harry P.: *See—*
Hooper, Christopher C.; Ellison, Burlan E.; and Spranca, Harry P., 4,321,780, Cl. 52-506.000.

Stacheter, Johann: *See—*
Hain, Gottfried; Wulff, Bernd; and Stacheter, Johann, 4,321,861, Cl. 99-455.000.

Staerzl, Richard E., to Brunswick Corporation. Marine cathodic protection system. 4,322,633, Cl. 307-95.000.

Stahl, Keith E. Tension gauge. 4,322,193, Cl. 411-11.000.

Stahler, Gerhard, to Hoechst Aktiengesellschaft. Process for the manufacture of 2-chloroethane-phosphonic acid. 4,322,371, Cl. 260-502.40R.

Stahly, Frederick A.: *See—*
Merrill, Stewart H.; Stahly, Frederick A.; Turnblom, Ernest W.; Wright, Beth G.; and Wright, Hal E., 4,322,487, Cl. 430-37.000.

Stallard, Steven M. Circular chess game. 4,322,085, Cl. 273-261.000.

Stanbery, Billy J., to Boeing Company, The. Solar cells and methods for manufacture thereof. 4,322,571, Cl. 136-255.000.

Standard Oil Co., The: *See*—
Guttmann, Andrew T.; and Grasselli, Robert K., 4,322,368, Cl. 260-465.300.
Miloscia, William J.; Turnbaugh, John A.; and Giddings, Brandford E., 4,322,510, Cl. 525-310.000.
Standard Oil Company (Indiana): *See*—
Kuhlmann, George E.; and Bemis, Alan G., 4,322,549, Cl. 562-416.000.
Stanley, Alistair J.: *See*—
Carson, Richard G.; McCall, Frank B.; and Stanley, Alistair J., 4,322,710, Cl. 338-61.000.
Stanton, Austin N. Virtual sound system for the visually handicapped. 4,322,744, Cl. 358-94.000.
State of Israel, Ministry of Agriculture, The: *See*—
Zaltzman, Arthur; Mizrach, Amos; and Schmilovitz, Zeev, 4,322,287, Cl. 209-44.000.
Stauffer Chemical Company: *See*—
Teach, Eugene G., 4,322,240, Cl. 71-88.000.
Steelcase Inc.: *See*—
Felix, Gerald J., 4,321,841, Cl. 74-615.000.
Steffen, Klaus-Dieter: *See*—
Herrmann, Hans-Joachim; Meyer, Gunther; and Steffen, Klaus-Dieter, 4,322,554, Cl. 564-273.000.
Stegmanns, Walter: *See*—
Koppe, Uwe; Stegmanns, Walter; and Weisner, Horst, 4,321,967, Cl. 166-250.000.
Steinberg, Ray. Decorative scarf. 4,321,709, Cl. 2-207.000.
Steiner Corporation: *See*—
Smith, Randel P., 4,322,019, Cl. 222-83.500.
Steiner, Eginhard: *See*—
Martin, Pierre; Greuter, Hans; Steiner, Eginhard; and Bellus, Daniel, 4,322,374, Cl. 260-544.00Y.
Steinhage, Peter-Wilhelm, to Heimann GmbH. Camera tube for thermal imaging. 4,322,620, Cl. 250-333.000.
Stemer, Jacques: *See*—
Bouzard, Daniel; Perol, Claude; Stemer, Jacques; Weber, Abraham; and Granatek, Edmund S., 4,322,424, Cl. 424-257.000.
Sterling Drug Inc.: *See*—
Crounse, Nathan N.; and Schmidt, Paul J., 4,322,352, Cl. 260-326.14R.
Sternberg, Stanley R., to Environmental Research Institute of Michigan. Method and apparatus for pattern recognition and detection. 4,322,716, Cl. 340-146.3MA.
Stevens, Samuel B., to Caterpillar Tractor Co. Profile actuated cable wrapping apparatus. 4,322,039, Cl. 242-4.0BE.
Stevenson, William H., III. Method and apparatus for treating foodstuffs with liquid. 4,321,862, Cl. 99-468.000.
Stiegelmeier, Owen E. Heavy duty impeller. 4,322,200, Cl. 416-184.000.
Stiller, Jill P.: *See*—
Engel, Michael R.; and Stiller, Jill P., 4,322,441, Cl. 424-331.000.
Stimens, David R., to Allied Automation, Inc. Heating device for skin packaging machine. 4,322,605, Cl. 219-532.000.
Stjepanovic, Milorad; Moreau, Michele, nee Huguet; and Dugniolle, Jacques, to Dugniolle, Jacques. P-Acetaminophenyl phosphate salts as analgesics and antipyretics. 4,322,410, Cl. 424-180.000.
Stoltman, Donald D., to General Motors Corporation. Engine control method. 4,321,902, Cl. 123-435.000.
Stone, Raymond. Invertible pump sprayer. 4,322,020, Cl. 222-95.000.
Stonebank, Roger: *See*—
Lickel, Kenneth F.; and Stonebank, Roger, 4,322,797, Cl. 364-414.000.
Storandt, Ralf, to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH. Cross country ski binding. 4,322,091, Cl. 280-615.000.
Storzel, Karl: *See*—
Burgdorf, Jochen; and Storzel, Karl, 4,321,984, Cl. 188-73.390.
Stossel, Alain: *See*—
Vieira, David D.; Dinard, Jacques; and Stossel, Alain, 4,322,683, Cl. 324-225.000.
Stott, Paul E.; and Wheeler, Edward L., to Uniroyal, Inc. Simultaneous expansion and cure of polyester resin composition. 4,322,502, Cl. 521-99.000.
Stoyanov, Atanas N.: *See*—
Dimov, Peter S.; Pavlov, Georgi N.; Stoyanov, Atanas N.; and Nankinov, Ivan D., 4,321,863, Cl. 99-470.000.
Streich, Steven G.; and Nickles, R. Benton, Jr., to Halliburton Company. Conductor pipe plug and method of installing conductor pipe. 4,322,181, Cl. 405-224.000.
Streicher, Rolf: *See*—
Hahn, Erwin; Lach, Dietrich; and Streicher, Rolf, 4,322,210, Cl. 8-94.180.
Strickland, Robert E. Tree climbing-hunting and game cart device. 4,321,982, Cl. 182-20.000.
Stromberg-Carlson Corporation: *See*—
Christain, Ronald W.; and Slingsby, Barry, 4,322,581, Cl. 179-18.0ES.
Stromotich, Frank L. Compound epicyclic cog belt speed reducer. 4,321,842, Cl. 74-762.000.
Strong, Barry C., to William Cotton Limited. Draw mechanism for straight bar knitting machines. 4,321,807, Cl. 66-126.00R.
Strong, Herbert M., to General Electric Company. High pressure reaction vessel for growing diamond on diamond seed and method therefor. 4,322,396, Cl. 423-446.000.
Struble, Glenn E., to Diamond International Corporation. Tape cassette packages and holders therefor. 4,322,000, Cl. 206-387.000.
Struger, Odo J., to Allen-Bradley Company. Triac-protected output circuit. 4,322,771, Cl. 361-104.000.
Studley Paper Company, Inc.: *See*—
Fesco, John E., 4,322,259, Cl. 156-203.000.
Su, Jong-Ching: *See*—
Chen, Hsien-Jer; Liu, Tin-Yin; Sung, Hsien-Yi; and Su, Jong-Ching, 4,322,344, Cl. 260-123.500.
Sudweeks, Walter B.; and Lawrence, Larry D., to IRECO Chemicals. Thermally stable emulsion explosive composition. 4,322,258, Cl. 149-2.000.
Suenobu, Koreyoshi; Kohara, Masanori; Katsuyama, Kazuki; and Kinishi, Ryoichi, to Yoshitomi Pharmaceutical Industries, Ltd. Method of producing polyurethanes. 4,322,519, Cl. 528-45.000.
Sugalski, Raymond K., to General Electric Company. Spiral wound electrochemical cell having high capacity. 4,322,484, Cl. 429-94.000.
Sugasawa, Fukashi, to Nissan Motor Company, Limited. Frequency discriminating circuit. 4,322,642, Cl. 307-522.000.
Sugihara, Hideo, to Sugihara Rinki Kabushiki Kaisha. Chain guide for a chain saw. 4,321,750, Cl. 30-384.000.
Sugihara Rinki Kabushiki Kaisha: *See*—
Sugihara, Hideo, 4,321,750, Cl. 30-384.000.
Sui, Chin T.: *See*—
Gleason, Robert J.; and Sui, Chin T., 4,322,393, Cl. 423-242.000.
Sulzer Brothers Ltd.: *See*—
Hintsch, Otto, 4,321,951, Cl. 139-353.000.
Sumi, Akiyasu: *See*—
Hashimoto, Shigeru; and Sumi, Akiyasu, 4,322,154, Cl. 354-286.000.
Sumitomo Electric Industries, Ltd.: *See*—
Mano, Hiroshi, 4,321,711, Cl. 3-1.400.
Sumiyoshi, Masaharu: *See*—
Hisegawa, Takashi; Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; Kumano, Mikio; and Sumiyoshi, Masaharu, 4,322,800, Cl. 364-431.050.
Sung, Hsien-Yi: *See*—
Chen, Hsien-Jer; Liu, Tin-Yin; Sung, Hsien-Yi; and Su, Jong-Ching, 4,322,344, Cl. 260-123.500.
Sussman, Howard. Fingernail-polishing article of manufacture. 4,321,935, Cl. 132-73.000.
Sutter, Richard A. Charcoal starter-burner. 4,321,907, Cl. 126-25.00B.
Sutton, Gordon W., to British Petroleum Company Limited, The. Sparger nozzles. 4,322,384, Cl. 422-144.000.
Suzuki, Akira: *See*—
Nishi, Kunihiko; Wakashima, Yoshiaki; Suzuki, Akira; Kaneda, Aizo; and Tuzuku, Sumumu, 4,322,593, Cl. 219-10.810.
Suzuki, Hiroshi: *See*—
Onda, Yoshiro; Muto, Hiroaki; and Suzuki, Hiroshi, 4,322,524, Cl. 536-55.000.
Suzuki, Kenji: *See*—
Inoue, Atsushi; Yamada, Hiromichi; and Suzuki, Kenji, 4,322,651, Cl. 310-313.00B.
Suzuki, Mitsuyuki: *See*—
Yamanaka, Minoru; Haneda, Hideo; Katoh, Masatoshi; and Suzuki, Mitsuyuki, 4,322,057, Cl. 251-129.000.
Suzuki, Ryoichi; and Uchiyama, Takashi, to Canon Kabushiki Kaisha. Aperture stop-down confirmation device for camera. 4,322,144, Cl. 354-43.000.
Suzuki, Sadahide: *See*—
Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hagime; and Suzuki, Sadahide, 4,321,978, Cl. 180-225.000.
Suzuki, Shuichi: *See*—
Wada, Moriyasu; Suzuki, Shuichi; Ito, Takeo; and Hayase, Shuzi, 4,322,513, Cl. 525-507.000.
Suzuki, Takeo: *See*—
Ohta, Shigeo; Suzuki, Takeo; and Kuwabara, Kazumi, 4,322,856, Cl. 455-189.000.
Suzuki, Yutaka: *See*—
Hisegawa, Takashi; Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; Kumano, Mikio; and Sumiyoshi, Masaharu, 4,322,800, Cl. 364-431.050.
Svensson, Assar N.: *See*—
Hurst, George P.; and Svensson, Assar N., 4,321,742, Cl. 29-445.000.
Swiss Aluminium Ltd.: *See*—
Jemec, Raoul, 4,322,282, Cl. 204-243.00R.
Syntex (U.S.A.) Inc.: *See*—
Weinhardt, Klaus; and Marx, Michael, 4,322,421, Cl. 424-251.000.
Systems, Science and Software: *See*—
Ginn, Warren G., 4,322,728, Cl. 340-870.380.
Szabo nee Czibula, Gabriella: *See*—
Korosi, Jeno; Lang, Tibor; Szekely, Jozsef; Andrasi, Ferenc; Zolyomi, Gabor; Borsi, Jozsef; Goldschmidt nee Horvath, Katalin; Hamori, Tamas; Szabo nee Czibula, Gabriella; Meszaros nee Dunai-Kovacs, Zsuzsanna; and Miglecz, Erzsebet, 4,322,346, Cl. 260-239.0BD.
Szabo, Tibor; and Karr, Robert L. Bar puller for numerically controlled lathe. 4,321,845, Cl. 82-2.500.
Szczesny, Donald E., to TRW Inc. Joint assembly. 4,322,175, Cl. 403-134.000.
Szekely, Jozsef: *See*—
Korosi, Jeno; Lang, Tibor; Szekely, Jozsef; Andrasi, Ferenc; Zolyomi, Gabor; Borsi, Jozsef; Goldschmidt nee Horvath, Katalin; Hamori, Tamas; Szabo nee Czibula, Gabriella; Meszaros nee Dunai-Kovacs, Zsuzsanna; and Miglecz, Erzsebet, 4,322,346, Cl. 260-239.0BD.
T. C. Mfg. Co., Inc.: *See*—
Cottam, Spencer D., 4,322,262, Cl. 156-392.000.

Tabata, Yoneho: *See*—
Matsuda, Osamu; Watanabe, Terutaka; Tabata, Yoneho; and Machi, Sueo, 4,322,511, Cl. 525-344.000.
Tachikawa, Kyoji; Inoue, Kiyoshi; and Togano, Kazumasa, to National Research Institute for Metals. Method for producing superconductors. 4,321,749, Cl. 29-599.000.
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, to Nisshin Flour Milling Co., Ltd. Nonaprenylamine derivatives. 4,322,555, Cl. 564-305.000.
Tajima, Yoshio: *See*—
Miyoshi, Mituji; Matsuura, Kazuo; and Tajima, Yoshio, 4,322,514, Cl. 526-124.000.
Takahashi, Nagashige; Harada, Shinichi; and Yamamori, Eiji, to Kabushiki Kaisha Medos Kenkyusho. Illuminating light control device for endoscope. 4,322,129, Cl. 350-269.000.
Takahashi, Sataro; Ogawa, Ryota; and Arai, Yasunori, to Asahi Kogaku Kogyo Kabushiki Kaisha. Variable magnification type copying machine. 4,322,159, Cl. 355-57.000.
Takahashi, Tetsuo; and Takaya, Minoru. Laminated electronic parts and process for making the same. 4,322,698, Cl. 333-184.000.
Takahashi, Toshihiro: *See*—
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,322,555, Cl. 564-305.000.
Takai, Souichi; Watanabe, Yukinori; and Matsumoto, Kaname, to Nepon Kabushiki Kaisha (NEPON Inc.). Apparatus for defecating a urinal by means of foam. 4,321,714, Cl. 4-310.000.
Takasago, Hiroaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Solid state switch. 4,322,637, Cl. 307-252.00A.
Takase, Junji: *See*—
Mita, Tetsuo; Tani, Nobutaka; Nakanishi, Hirokazu; Takase, Junji; and Isayama, Katsuhiko, 4,322,272, Cl. 204-159.130.
Takaya, Minoru: *See*—
Takahashi, Tetsuo; and Takaya, Minoru, 4,322,698, Cl. 333-184.000.
Takayama, Kenichiro; Adachi, Tetsuo; Kohata, Mamoru; Hattori, Kiyoji; and Tomiyama, Tomoko, to Kyowa Hakko Kogyo Co., Ltd. Citric acid producing mutant yeast strains. 4,322,498, Cl. 435-255.000.
Takeda Chemical Industries, Ltd.: *See*—
Asai, Mitsuko; Izawa, Motowo; and Tanida, Seiichi, 4,322,348, Cl. 260-239.30P.
Takeda, Hiromitsu: *See*—
Komatsu, Shuichi; Nakahashi, Masako; Takeda, Hiromitsu; and Yamada, Masayuki, 4,321,821, Cl. 73-15.00R.
Takeda, Keiso, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel injection type internal combustion engine. 4,321,900, Cl. 123-339.000.
Takemoto, Iwao; Nagahara, Shusaku; Fujita, Tsutomu; and Sato, Kazuo, to Hitachi, Ltd.; and Hitachi Denshi Kabushiki Kaisha. Solid-state color imaging camera. 4,322,740, Cl. 358-44.000.
Takemura, Yasuo; and Yoshida, Okio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing a solid-state image sensing device. 4,321,747, Cl. 29-572.000.
Takenaga, Mutsuo: *See*—
Yamashita, Tadaoki; Ohta, Takeo; Akahira, Nobuo; Nakamura, Tatsushi; and Takenaga, Mutsuo, 4,322,839, Cl. 369-122.000.
Takenaka, Shigeo; and Hamano, Eizaburo, to Tokyo Shibaura Denki Kabushiki Kaisha. Beam index color cathode ray tube. 4,322,655, Cl. 313-471.000.
Takeno, Hidekazu: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,322,341, Cl. 260-112.50R.
Takimoto, Hiroyuki; and Toyama, Masamichi, to Canon Kabushiki Kaisha. Shutter opening angle control device for a motion picture camera. 4,322,140, Cl. 352-91.00C.
Takizawa, Junichi, to Fuji Jukogyo Kabushiki Kaisha. Safety belt device for vehicles. 4,322,095, Cl. 280-802.000.
Tanaka, Hirokazu: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; Hashimoto, Masashi; Kuroda, Yoshio; Iguchi, Eiko; Kohsaka, Masanobu; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,322,341, Cl. 260-112.50R.
Tanaka, Katsuyuki; Kuwakado, Satosi; Tsuge, Noboru; and Shimogawa, Toshiaki, to Nippon Soken, Inc. Seat belt retractor. 4,322,046, Cl. 242-107.40A.
Tanaka, Kenjiro. Breakdown container. 4,322,013, Cl. 220-1.00R.
Tanaka, Kunimaro: *See*—
Onishi, Ken; Ozaki, Minoru; and Tanaka, Kunimaro, 4,322,756, Cl. 360-13.000.
Tanaka, Toshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Photoelectric coupling device. 4,322,628, Cl. 250-551.000.
Tanaka, Yukio, to Victor Company of Japan, Limited. Multi-track magnetic head for a tape player. 4,322,764, Cl. 360-129.000.
Tani, Nobutaka: *See*—
Mita, Tetsuo; Tani, Nobutaka; Nakanishi, Hirokazu; Takase, Junji; and Isayama, Katsuhiko, 4,322,272, Cl. 204-159.130.
Tanida, Seiichi: *See*—
Asai, Mitsuko; Izawa, Motowo; and Tanida, Seiichi, 4,322,348, Cl. 260-239.30P.
Tanimoto, Tatsuo; Ozawa, Ryuichi; and Tarumasa, Noriyoshi, to Kabushiki Kaisha Kobe Seiko Sho. Staggered hob. 4,322,185, Cl. 407-23.000.
Tantayanon, Rewat: *See*—
Plumb, Robert C.; and Tantayanon, Rewat, 4,322,397, Cl. 423-544.000.
Tapco Products Company, Inc.: *See*—
Barnack, Henry C., 4,321,817, Cl. 72-319.000.
Tappe, Horst; Kindler, Horst; Roth, Kurt; and Ong, Sien L., to Cassella Aktiengesellschaft. Process for the production of reserve effects on polyestercellulose mixed fiber textiles. 4,322,213, Cl. 8-449.000.
Tarpley, Roy W.; Rehn, Larry A.; and Davis, Paul H., to Texas Instruments Incorporated. Convective cooling rate sensor. 4,321,825, Cl. 73-204.000.
Tarumasa, Noriyoshi: *See*—
Tanimoto, Tatsuo; Ozawa, Ryuichi; and Tarumasa, Noriyoshi, 4,322,185, Cl. 407-23.000.
Tarumizu, Yasumasa: *See*—
Uranaka, Kyoji; Tarumizu, Yasumasa; Hara, Hideo; and Ichimura, Masaaki, 4,321,793, Cl. 60-358.000.
Tatsuguchi, Kazuo, to Victor Company of Japan, Ltd. High-speed reproducing system in apparatus for reproducing information signals recorded on a rotary recording medium. 4,322,748, Cl. 358-128.500.
Taylor, Charles L., to Raymond Corporation, The. Land vehicle guidance method and apparatus. 4,322,670, Cl. 318-587.000.
Taylor, Lester E.: *See*—
Holland, Mason P.; Taylor, Lester E.; and Branch, James W., 4,322,049, Cl. 248-154.000.
Taylor, Lloyd D.: *See*—
Land, Edwin H.; Bronstein-Bonte, Irena Y.; and Taylor, Lloyd D., 4,322,489, Cl. 430-213.000.
Taylor, Timothy P.; Dowell, Joseph; and Haskew, Francis A., to Coal Industry (Patents) Limited. Excavating machines for excavating rock and minerals having first and second alternative modes of control. 4,322,113, Cl. 299-1.000.
Teach, Eugene G., to Stauffer Chemical Company. Haloacyl and thiohaloacyl aryl-substituted oxazolidines and thiazolidines-herbicidal antidotes. 4,322,240, Cl. 71-88.000.
Teccor Electronics, Inc.: *See*—
Hart, Edward F.; and Fletcher, Deane D., II, 4,322,632, Cl. 307-41.000.
Teijido, Joseph A.; and Vogelaar, Bernard F., to Deere & Company. Torque responsive disconnect for a V-belt driven element. 4,321,991, Cl. 192-0.034.
Tejima, Masayuki: *See*—
Okazaki, Tomomi; Tomita, Kenichi; Katsura, Hakuji; Tejima, Masayuki; and Naganuma, Masako, 4,322,544, Cl. 560-55.000.
Tektronix, Inc.: *See*—
Schlotzhauer, Kenneth G.; and Metz, Arthur J., 4,322,688, Cl. 330-252.000.
Snyder, Delmer E., 4,322,572, Cl. 174-35.00R.
Teledyne Industries, Inc.: *See*—
Henry, Richard J.; Zackay, Victor F.; and Bhat, Manjeshwar S., 4,322,246, Cl. 75-124.000.
Teleflex Incorporated: *See*—
Kalamon, Bruce, 4,321,840, Cl. 74-501.00R.
Tellier, Roger J. Cord or hose caddy. 4,322,045, Cl. 242-86.100.
Tenn, Bertil. Hauling vehicle. 4,321,977, Cl. 180-12.000.
Terry, John B.: *See*—
Mein, Gordon F.; and Terry, John B., 4,322,586, Cl. 179-170.0NC.
Terry, Marie K.: *See*—
Terry, Wilfred F., Jr.; and Terry, Marie K., 4,322,081, Cl. 273-87.400.
Terry, Wilfred F., Jr.; and Terry, Marie K. Finger tip golf game. 4,322,081, Cl. 273-87.400.
Terui, Takao: *See*—
Fukuma, Nobuo; Kato, Yoshito; and Terui, Takao, 4,322,669, Cl. 318-571.000.
Texaco Inc.: *See*—
Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., 4,322,556, Cl. 564-423.000.
Traverse, Eugene F.; and Deibert, Albert D., 4,321,966, Cl. 166-245.000.
Virk, Kashmir S.; and Alperstein, Martin, 4,322,387, Cl. 422-174.000.
Texas Instruments Incorporated: *See*—
Allan, James D., 4,322,824, Cl. 365-185.000.
Bell, Kenneth M.; and Trogolo, Joe R., 4,322,738, Cl. 357-22.000.
Bilek, F. Thomas, 4,322,044, Cl. 242-75.400.
Kilby, Jack S.; McKee, William R.; and Porter, Wilbur A., 4,322,379, Cl. 264-13.000.
Redwine, Donald J., 4,322,635, Cl. 307-221.00C.
Tarpley, Roy W.; Rehn, Larry A.; and Davis, Paul H., 4,321,825, Cl. 73-204.000.
Thebaud, Sacha. Modular contoured furniture. 4,322,109, Cl. 297-25.000.
Thigpen, James L. Ripper apparatus. 4,321,970, Cl. 172-464.000.
Thistleton, John S., to Lucas Industries Limited. Brake actuators. 4,321,986, Cl. 188-196.00F.
Thompson, Andy L. Breather bag apparatus. 4,321,866, Cl. 99-646.00S.
Thompson, C. Ames. Large capacity drainage receptacle. 4,321,713, Cl. 4-290.000.
Thompson, Morice W.: *See*—
Graetz, Clive W.; and Thompson, Morice W., 4,322,328, Cl. 524-458.000.
Thompson, Robert E.; and McNinney, Richard P., to Schmidt Manufacturing, Inc. Pipe side valve. 4,322,058, Cl. 251-145.000.
Thomson-Brandt: *See*—
Rilly, Gerard, 4,322,663, Cl. 315-408.000.

Thomson-CSF: *See*—
Butin, Henri, 4,322,686, Cl. 328-119.000.
Drabowitch, Serge, 4,322,731, Cl. 343-895.000.
Thomson, David M.: *See*—
Peng, Stephen C.; and Thomson, David M., 4,322,508, Cl. 525-110.000.
Thornell, Ernest L. Toy projector. 4,321,906, Cl. 124-10.000.
Thrash, Robert N., to Kearney-National, Inc. Piston actuated striker for electric fuse. 4,322,706, Cl. 337-417.000.
Tielemans, Peter A. W.; and Jacobs, Cornelis A. J., to U.S. Philips Corporation. High-pressure sodium vapor discharge lamp. 4,322,654, Cl. 313-218.000.
Tilbor, Neil: *See*—
Cooper, Julius; and Tilbor, Neil, 4,322,079, Cl. 273-86.00B.
Timex Corporation: *See*—
Sorkin, Howard, 4,322,354, Cl. 260-340.700.
Tisbo, Cosmo N.; and Tisbo, Thomas A., to Custom Plastics, Inc. Edging strip. 4,321,769, Cl. 47-33.000.
Tisbo, Thomas A.: *See*—
Tisbo, Cosmo N.; and Tisbo, Thomas A., 4,321,769, Cl. 47-33.000.
Toalson, David C. Ton-mile recorder. 4,321,836, Cl. 73-862.440.
Togano, Kazumasa: *See*—
Tachikawa, Kyoji; Inoue, Kiyoshi; and Togano, Kazumasa, 4,321,749, Cl. 29-599.000.
Toivo, Auvo A. S. Furnace for consuming solid fuel. 4,321,879, Cl. 110-267.000.
Tokuhara, Masaharu: *See*—
Hongu, Masayuki; Ohmuro, Shigeru; and Tokuhara, Masaharu, 4,322,751, Cl. 358-195.100.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Azuma, Takashi, 4,321,886, Cl. 118-689.000.
Iida, Kazuhiko, 4,322,717, Cl. 340-146.3AH.
Kohyama, Mitsuaki, 4,322,156, Cl. 355-3.0CH.
Komatsu, Shuichi; Nakahashi, Masako; Takeda, Hiromitsu; and Yamada, Masayuki, 4,321,821, Cl. 73-15.00R.
Sadamasa, Tetsuo; and Ichikawa, Osamu, 4,322,735, Cl. 357-17.000.
Sakaue, Tatsuo; Iida, Tetsuya; and Sato, Chikara, 4,322,696, Cl. 333-165.000.
Takasago, Hiroaki, 4,322,637, Cl. 307-252.00A.
Takemura, Yasuo; and Yoshida, Okio, 4,321,747, Cl. 29-572.000.
Takenaka, Shigeo; and Hamano, Eizaburo, 4,322,655, Cl. 313-471.000.
Tanaka, Toshiaki, 4,322,628, Cl. 250-551.000.
Wada, Moriyasu; Suzuki, Shuichi; Ito, Takeo; and Hayase, Shuzi, 4,322,513, Cl. 525-507.000.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Ishii, Takatoshi, 4,322,791, Cl. 364-200.000.
Tolley, Calvert B.; Reinke, Theodore S.; and Brooks, John C., to Sea Savory, Inc. Core box supporting means for vibratory type crab processing machine. 4,321,730, Cl. 17-71.000.
Tolley, William K.; and Laughlin, William C., to UOP Inc. Hydrometallurgical recovery of copper, cobalt nickel with reductive and oxidative leaching. 4,322,390, Cl. 423-27.000.
Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hagime; and Suzuki, Sadahide, to Yamaha Hatsudoki Kabushiki Kaisha. Intake system for motorcycle engines having V-shaped cylinder arrangement. 4,321,978, Cl. 180-225.000.
Tominaga, Shinji; and Matsuda, Motonobu, to Minolta Camera Kabushiki Kaisha. Distance indication arrangement for automatic focus control camera. 4,322,141, Cl. 354-25.000.
Tomisawa, Setsuo: *See*—
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,322,402, Cl. 424-78.000.
Tomita, Kenichi: *See*—
Okazaki, Tomomi; Tomita, Kenichi; Katsura, Hakuji; Tejima, Masayuki; and Naganuma, Masako, 4,322,544, Cl. 560-55.000.
Tomita, Satoru: *See*—
Ebi, Yutaka; Ohori, Tamio; Matsumoto, Fuyuhiko; and Tomita, Satoru, 4,322,734, Cl. 346-153.100.
Tomita, Shimpei: *See*—
Tsunoda, Yoshitoshi; Tomita, Shimpei; and Miyazawa, Chihiro, 4,322,564, Cl. 568-454.000.
Tomiyama, Tomoko: *See*—
Takayama, Kenichiro; Adachi, Tetsuo; Kohata, Mamoru; Hattori, Kiyoji; and Tomiyama, Tomoko, 4,322,498, Cl. 435-255.000.
Tomlinson, Richard G.; and Glenn, William H., to United Technologies Corporation. Digitally compatible optical pressure measurement. 4,321,831, Cl. 73-705.000.
Tomlinson, Roderick P. J., to Lockley Services Pty. Ltd.; Barry, Graham Charles; and Field, Norman John, a part interest. Sheet printed with invisible inks. 4,322,466, Cl. 428-199.000.
Tomsen, Harald: *See*—
Krakow, Heinz; Tomsen, Harald; and Herm, Jurgen, 4,322,596, Cl. 219-73.210.
Topliffe, Doris H. Ball with extending tethers serving as a toy especially for small dogs. 4,321,888, Cl. 119-29.000.
Toray Industries, Inc.: *See*—
Okazaki, Tomomi; Tomita, Kenichi; Katsura, Hakuji; Tejima, Masayuki; and Naganuma, Masako, 4,322,544, Cl. 560-55.000.
Toro Company, The: *See*—
Wood, William D.; and Lamusga, Gary R., 4,321,784, Cl. 56-17.200.
Torzala, Terence A.: *See*—
Myers, William P.; Torzala, Terence A.; and Henneman, John W., 4,322,228, Cl. 55-163.000.
Tovrog, Benjamin S.; Diamond, S. Elliot; and Mares, Frank, to Allied Corporation. Oxidation process using metal nitro or nitrosyl complex. 4,322,562, Cl. 568-401.000.
Towae, Friedrich: *See*—
Merger, Franz; and Towae, Friedrich, 4,322,365, Cl. 260-453.00P.
Townsend, Wesley P.: *See*—
Baron, William J.; Kenney, John T.; and Townsend, Wesley P., 4,322,457, Cl. 427-259.000.
Emerson, John A.; and Townsend, Wesley P., 4,322,451, Cl. 427-53.100.
Toyama, Masamichi: *See*—
Takimoto, Hiroyuki; and Toyama, Masamichi, 4,322,140, Cl. 352-91.00C.
Toyama, Tatsuro: *See*—
Ueta, Yasuomi; and Toyama, Tatsuro, 4,322,777, Cl. 361-397.000.
Toyoda, Kazuhiro, to Fujitsu Limited. Bias circuit. 4,322,676, Cl. 323-303.000.
Toyoda, Kazuhiro, to Fujitsu Limited. Semiconductor integrated circuit device. 4,322,820, Cl. 365-154.000.
Toyoshima, Shigeru: *See*—
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,322,402, Cl. 424-78.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Fukuma, Nobuo; Kato, Yoshito; and Terui, Takao, 4,322,669, Cl. 318-571.000.
Hisegawa, Takashi; Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; Kumano, Mikio; and Sumiyoshi, Masaharu, 4,322,800, Cl. 364-431.050.
Kohama, Tokio; Matsui, Takeshi; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,322,799, Cl. 364-431.060.
Kuroyama, Toshinobu; and Ohta, Hisatoshi, 4,321,979, Cl. 180-268.000.
Takeda, Keiso, 4,321,900, Cl. 123-339.000.
Yasuda, Eturo; Sato, Susumu; Segawa, Yoshihiro; Hattori, Tadashi; and Aoki, Keiji, 4,322,383, Cl. 422-95.000.
Traunecker, Werner: *See*—
Losel, Walter; Esser, Franz; Roos, Otto; Reichl, Richard; Kuhn, Franz J.; and Traunecker, Werner, 4,322,418, Cl. 424-248.570.
Traverse, Eugene F.; and Deibert, Albert D., to Texaco Inc. High vertical conformance steam drive oil recovery method. 4,321,966, Cl. 166-245.000.
Traxler, James T.: *See*—
Hokama, Takeo; and Traxler, James T., 4,322,414, Cl. 424-214.000.
Trihey, John M., to Vulcan Australia Limited. Servo-controlled solar tracking apparatus. 4,321,909, Cl. 126-425.000.
Troeder, Lutz; and Hoyss, Franz, to Hilti Aktiengesellschaft. Stator for an electromotor. 4,322,649, Cl. 310-194.000.
Trogolo, Joe R.: *See*—
Bell, Kenneth M.; and Trogolo, Joe R., 4,322,738, Cl. 357-22.000.
Troiano, Joseph. Golf hat with blinders. 4,321,708, Cl. 2-10.000.
Tronc, Dominique, to C.G.R. MeV. Device for the achromatic magnetic deflection of a beam of charged particles and an irradiation apparatus using such a device. 4,322,622, Cl. 250-396.0ML.
Trussler, Ronald C.; Reiten, Stanley V.; and Wyeth, William A., to Canadian General Electric Company Ltd. Power control of a stalling motor. 4,322,668, Cl. 318-434.000.
Trutzschler GmbH & Co. KG: *See*—
Erben, Ludwig, 4,321,732, Cl. 19-240.000.
Kott, Hermann, 4,321,731, Cl. 19-102.000.
TRW Inc.: *See*—
Szczesny, Donald E., 4,322,175, Cl. 403-134.000.
Wahlers, Richard L.; and Merz, Kenneth M., 4,322,477, Cl. 428-432.000.
Tsai, Shirley C.; and McIlvried, Howard G., III, to Gulf Research & Development Company. Solvent refining of coal using octahydrophenanthrene-enriched solvent and coal minerals recycle. 4,322,284, Cl. 208-10.000.
Tsuchiya, Yukio: *See*—
Shimada, Kunihiko; and Tsuchiya, Yukio, 4,322,584, Cl. 179-115.5VC.
Tsuge, Noboru: *See*—
Tanaka, Katsuyuki; Kuwakado, Satosi; Tsuge, Noboru; and Shimogawa, Toshiaki, 4,322,046, Cl. 242-107.40A.
Tsujide, Tohru: *See*—
Sasaki, Isao; Hotta, Nobuaki; and Tsujide, Tohru, 4,322,736, Cl. 357-59.000.
Tsujii, Norihiro: *See*—
Nakahara, Yoshihiko; Tsujii, Norihiro; Nakanishi, Kenichi; Sakai, Yuji; and Saigo, Masanori, 4,321,816, Cl. 72-267.000.
Tsunoda, Yoshitoshi; Tomita, Shimpei; and Miyazawa, Chihiro, to Mitsubishi Chemical Industries Limited. Process for hydroformylation of olefins. 4,322,564, Cl. 568-454,000.
Tsutsui, Michiaki: *See*—
Manabe, Osamu; Utsunomiya, Masayasu; Kamiyama, Morihiro; Tsutsui, Michiaki; and Matsumoto, Masayuki, 4,322,214, Cl. 8-582.000.
Tsutsui, Yujiro: *See*—
Kobayashi, Kyoji; Tsutsui, Yujiro; Kaneko, Noboru; Hidaka, Ekiro; Konishi, Kiyoshi; and Iwaoka, Toshio, 4,321,901, Cl. 123-352.000.
Tsuzuki, Yoshihiko: *See*—
Hisegawa, Takashi; Ito, Osamu; Hobo, Nobuhito; Tsuzuki, Yoshihiko; Suzuki, Yutaka; Kumano, Mikio; and Sumiyoshi, Masaharu, 4,322,800, Cl. 364-431.050.

Tuller, Harold W.; Schulze, Stephen R.; and Wilson, George S., to Allied Chemical Corporation. Polyamide-polyethylene laminates. 4,322,480, Cl. 428-476.100.

Tumblin, John E., to Georgia Tech Research Institute. Automatic ear training apparatus. 4,321,853, Cl. 84-454.000.

Tune, Harold S. Method of utilizing empty aluminum beverage cans to provide an energy source. 4,322,483, Cl. 429-50.000.

Turgeon, Milton R.: *See—*
Zavada, Michael J.; Crisis, John O. E.; and Turgeon, Milton R., 4,322,192, Cl. 410-81.000.

Turk, Herbert: *See—*
Dammann, Peter; Schippers, Heinz; Turk, Herbert; and Schiminski, Herbert, 4,321,789, Cl. 57-224.000.

Turnbaugh, John A.: *See—*
Miloscia, William J.; Turnbaugh, John A.; and Giddings, Brandford E., 4,322,510, Cl. 525-310.000.

Turnblom, Ernest W.: *See—*
Merrill, Stewart H.; Stahly, Frederick A.; Turnblom, Ernest W.; Wright, Beth G.; and Wright, Hal E., 4,322,487, Cl. 430-37.000.

Turner, Susan F.: *See—*
Foote, Danny R.; and Turner, Susan F., 4,321,854, Cl. 87-6.000.

Turpin, Terry M., to Director, National U.S. Government, Security Agency. Electronic lens. 4,322,134, Cl. 350-361.000.

Tuzuku, Sumumu: *See—*
Nishi, Kunihiko; Wakashima, Yoshiaki; Suzuki, Akira; Kaneda, Aizo; and Tuzuku, Sumumu, 4,322,593, Cl. 219-10.810.

Twin View Glass, Inc.: *See—*
Whitehead, Merill, 4,321,778, Cl. 52-397.000.

Tyler, Derek E.: *See—*
Yarwood, John C.; Ungarean, Gary L.; Tyler, Derek E.; and Gaule, Gerhart K., 4,321,959, Cl. 164-467.000.

Tzakis, George J.: *See—*
Bart, Stan; and Tzakis, George J., 4,322,664, Cl. 315-408.000.

UBE Industries: *See—*
Kobayashi, Shinsaku; Kamoshita, Katsuo; Nagai, Shigeki; Honda, Takeo; Oda, Kiroku; Fujii, Katsutoshi; Kobayashi, Takashi; and Kojima, Mikio, 4,322,420, Cl. 424-251.000.

Uchida, Isamu; and Uchida, Shinya, to Laurel Bank Machine Co., Ltd. Register apparatus. 4,322,796, Cl. 364-405.000.

Uchida, Shinya: *See—*
Uchida, Isamu; and Uchida, Shinya, 4,322,796, Cl. 364-405.000.

Uchidoi, Masanori: *See—*
Shimizu, Masami; Uchidoi, Masanori; Date, Nebuaki; and Aizawa, Hiroshi, 4,322,146, Cl. 354-60.00E.

Uchiyama, Takashi: *See—*
Suzuki, Ryoichi; and Uchiyama, Takashi, 4,322,144, Cl. 354-43.000.

Uchiyama, Yasuji: *See—*
Oya, Akiyoshi; and Uchiyama, Yasuji, 4,321,850, Cl. 84-1.010.

Ueda, Hiroshi: *See—*
Kawamura, Kunio; and Ueda, Hiroshi, 4,322,142, Cl. 354-25.000.

Uede, Hisashi; Yano, Kohzo; Hamada, Hiroshi; Nakauchi, Hiroshi; and Inami, Yasuhiko, to Sharp Kabushiki Kaisha. Method of driving electrochromic display device and electrochromic display device therefor. 4,322,133, Cl. 350-357.000.

Uemura, Koichi; and Uemura, Makoto, to Uemura, Koichi. Method and apparatus for advancing cylindrical bodies underground. 4,322,180, Cl. 405-141.000.

Uemura, Makoto: *See—*
Uemura, Koichi; and Uemura, Makoto, 4,322,180, Cl. 405-141.000.

Ueno, Hagime: *See—*
Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hagime; and Suzuki, Sadahide, 4,321,978, Cl. 180-225.000.

Ueno, Kouji: *See—*
Fukushima, Toshitaka; and Ueno, Kouji, 4,322,640, Cl. 307-473.000.

Ueta, Yasuomi; and Toyama, Tatsuro, to Hitachi, Ltd. Circuit board formed with spark gap. 4,322,777, Cl. 361-397.000.

Uhre, Larry W.: *See—*
Hartung, Rodney L.; McCann, Dennis L.; Uhre, Larry W.; Bergmann, Richard P.; Hostetter, James A.; and Konrad, Nicholas J., 4,322,168, Cl. 366-15.000.

Ullner, Klaus, to Buehler-Miag GmbH. Method of and device for forming raw rubber charges. 4,322,803, Cl. 364-473.000.

UMC Industries, Inc.: *See—*
Chumley, Calvin L.; Hendrickson, William W.; and Mace, Leon P., 4,322,588, Cl. 200-5.00A.

Ungarean, Gary L.: *See—*
Yarwood, John C.; Ungarean, Gary L.; Tyler, Derek E.; and Gaule, Gerhart K., 4,321,959, Cl. 164-467.000.

Union Special Corporation: *See—*
Boser, Ronald J., 4,321,880, Cl. 112-127.000.

Uniroyal, Inc.: *See—*
Stott, Paul E.; and Wheeler, Edward L., 4,322,502, Cl. 521-99.000.

United Kingdom Atomic Energy Authority: *See—*
Harrison, Keith T.; McGeehin, Peter; and Hooper, Alan, 4,322,485, Cl. 429-193.000.

United States of America
Agriculture: *See—*
Yokoyama, Henry; Hayman, Ernest P.; Hsu, Wan-Jean; and Poling, Stephen M., 4,322,242, Cl. 71-121.000.
America: *See—*
Peck, Gary L., 4,322,438, Cl. 424-318.000.
Army: *See—*
Martin, Robert C., 4,321,824, Cl. 73-190.0EW.
Sayles, David C., 4,322,035, Cl. 239-265.110.
Zavada, Michael J.; Crisis, John O. E.; and Turgeon, Milton R., 4,322,192, Cl. 410-81.000.
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Amtmann, Hans H., 4,322,268, Cl. 376-298.000.
Cawley, William E.; and Warnick, Robert F., 4,322,853, Cl. 376-213.000.
Hasselquist, Paul B.; and Baldner, Richard, 4,322,205, Cl. 432-214.000.
Health and Human Services: *See—*
Leighton, Stephen B.; and Boyd, William H., 4,321,915, Cl. 128-4.000.
Navy: *See—*
Abadie, Erwin I.; Dick, John O.; and Forrester, Howard M., 4,321,871, Cl. 102-214.000.
Black, William L., 4,321,954, Cl. 141-329.000.
Chrzanowski, Edward J., 4,322,730, Cl. 343-18.00E.

U.S. Philips Corporation: *See—*
Beitler, Franz; Maryschka, Gerhard; and Shuster, Heinrich, 4,322,761, Cl. 360-85.000.
Cornelissen, Gerardus A. A. F.; Gerrits, Hendrik J.; and Kamerbeek, Evert M. H., 4,322,624, Cl. 250-406.000.
Kaire, Jean-Claude; and Six, Jean-Claude G., 4,322,634, Cl. 307-200.00A.
Kleis, Derk; and Van Gorsel, Johannis A., 4,322,579, Cl. 179-1.00D.
Lickel, Kenneth F.; and Stonebank, Roger, 4,322,797, Cl. 364-414.000.
Lohstroh, Jan; and Hart, Cornelis M., 4,322,821, Cl. 365-155.000.
Rioult, Jean-Pierre; and Fabien, Raymond, 4,322,264, Cl. 156-655.000.
Tielemans, Peter A. W.; and Jacobs, Cornelis A. J., 4,322,654, Cl. 313-218.000.
Voorman, Johannes O., 4,322,811, Cl. 364-825.000.
Weiss, Hermann, 4,322,808, Cl. 364-515.000.

United States Steel Corporation: *See—*
Kelly, Calvin E.; and Nicely, Thomas E., 4,322,101, Cl. 292-260.000.

United Technologies Corporation: *See—*
Bushnell, Calvin L.; Bregoli, Lawrence J.; and Schroll, Craig R., 4,322,482, Cl. 429-41.000.
Tomlinson, Richard G.; and Glenn, William H., 4,321,831, Cl. 73-705.000.

University of California, The Regents of the: *See—*
Baxter, John D.; Roberts, James L.; Seeburg, Peter H.; Goodman, Howard M.; and Shine, John, 4,322,499, Cl. 435-317.000.

University of Illinois Foundation: *See—*
Hendricks, Charles D., 4,322,378, Cl. 264-7.000.

University of Minnesota, The Regents of the: *See—*
Marple, Virgil A.; and Liu, Benjamin Y. H., 4,321,822, Cl. 73-28.000.

University of Utah: *See—*
Nelson, James A.; and Sorenson, James A., 4,322,619, Cl. 250-323.000.

University of Utah Research Foundation: *See—*
Janata, Jiri; and Ure, Roland W., Jr., 4,322,680, Cl. 324-71.0SN.

University Patents, Inc.: *See—*
Goepp, Robert A.; and Freese, Uwe E., 4,322,463, Cl. 428-138.000.

Unsold, Eberhard: *See—*
Eloy, Jean-Francois; and Unsold, Eberhard, 4,322,629, Cl. 250-299.000.

UOP Inc.: *See—*
Antos, George J., 4,322,285, Cl. 208-139.000.
Antos, George J., 4,322,286, Cl. 208-139.000.
Barley, Geoffrey W.; and Moorhouse, David, 4,322,111, Cl. 297-357.000.
House, David W., 4,322,310, Cl. 252-184.000.
Tolley, William K.; and Laughlin, William C., 4,322,390, Cl. 423-27.000.
Van Til, Alan E.; and Shoffner, James P., 4,322,254, Cl. 148-6.14R.

Upadek, Horst: *See—*
Conrad, Jens; Bruns, Klaus; and Upadek, Horst, 4,322,559, Cl. 568-373.000.

Upjohn Company, The: *See—*
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,322,525, Cl. 542-421.000.

Uranaka, Kyoji; Tarumizu, Yasumasa; Hara, Hideo; and Ichimura, Masaaki, to Kabushiki Kaisha Komatsu Seisakusho. Integrated hydraulic circuit for off highway work vehicles. 4,321,793, Cl. 60-358.000.

Ure, Roland W., Jr.: *See—*
Janata, Jiri; and Ure, Roland W., Jr., 4,322,680, Cl. 324-71.0SN.

Utagawa, Ken: *See—*
Fukuhara, Toru; and Utagawa, Ken, 4,322,616, Cl. 250-204.000.

Utsunomiya, Masayasu: *See—*
Manabe, Osamu; Utsunomiya, Masayasu; Kamiyama, Morihiro; Tsutsui, Michiaki; and Matsumoto, Masayuki, 4,322,214, Cl. 8-582.000.

Vadas, Zoltan; Belcsak, Zoltan; Luptak, Erno; Palfalvi, Gyorgy; Vasvari, Vilmos; and Wenzel, Bela, to Energiagazdalkodasi Intezet. Process for increasing the capacity and/or energetic efficiency of pressure-intensifying stations of hydrocarbon pipelines. 4,321,790, Cl. 60-39.020.

Valaas, Andrew M.: *See—*
DeVlieg, Garrett H.; and Valaas, Andrew M., 4,322,809, Cl. 364-565.000.

Vance, Ian A. W., to International Standard Electric Corporation. Decoding logic for frequency shift keying receiver. 4,322,851, Cl. 375-88.000.

Vandamme, Detlef: *See—*
Spirk, Franz; and Vandamme, Detlef, 4,322,645, Cl. 310-58.000.
van der Blom, Laurens, to Oce-van der Grinten N.V. Drying apparatus and method. 4,321,757, Cl. 34-23.000.
Van Der Meeren, Jozef H. R.: *See—*
Lambrechts, Peter F. T.; and Van Der Meeren, Jozef H. R., 4,322,322, Cl. 524-734.000.
Van Der Wall, Robert J.: *See—*
Ziegler, Kurt, 4,321,811, Cl. 70-356.000.
Van de Walker, Roger; and Draper, Weston E., Jr., to Norton Company. Earplug container. 4,321,998, Cl. 206-229.000.
van Drumpt, Jan D., to Akzona Incorporated. Process for cross-linking shaped non-polar synthetic resins and electrical insulation containing such resins. 4,322,273, Cl. 204-165.000.
Van Gorsel, Johannis A.: *See—*
Kleis, Derk; and Van Gorsel, Johannis A., 4,322,579, Cl. 179-1.00D.
Vansloun, Peter H.: *See—*
Hoff, Dave; and Vansloun, Peter H., 4,322,828, Cl. 367-118.000.
Van't Hof, Gustaaf. Wrist band for tennis rackets and the like. 4,322,077, Cl. 273-75.000.
Van Til, Alan E.; and Shoffner, James P., to UOP Inc. Regeneration of electrical conductivity of metallic surfaces. 4,322,254, Cl. 148-6.14R.
Varen Technology: *See—*
Vaughan, Ronald J., 4,322,560, Cl. 568-385.000.
Varian Associates, Inc.: *See—*
Abbott, Seth R., 4,322,542, Cl. 556-425.000.
Vasicek, Vladimir: *See—*
Cech, Miloslav; Vasicek, Vladimir; and Kuda, Vladimir, 4,321,947, Cl. 137-556.000.
Vasvari, Vilmos: *See—*
Vadas, Zoltan; Belcsak, Zoltan; Luptak, Erno; Palfalvi, Gyorgy; Vasvari, Vilmos; and Wenzel, Bela, 4,321,790, Cl. 60-39.020.
Vaughan, Ronald J., to Varen Technology. Process for controlling highly exothermic hydroperoxide decomposition. 4,322,560, Cl. 568-385.000.
VDO Adolf Schindling AG: *See—*
Ernst, Heinz; and Wesner, Gerhard, 4,322,835, Cl. 368-317.000.
Veenendaal, Jan: *See—*
Zuilichem, Dirk J. V.; Veenendaal, Jan; and Newton, David, 4,322,444, Cl. 426-241.000.
Veith, Werner; and Walter, Karl-Heinz, to Siemens Aktiengesellschaft. Gas-discharge display device. 4,322,657, Cl. 313-485.000.
Velsicol Chemical Corporation: *See—*
Hokama, Takeo; and Traxler, James T., 4,322,414, Cl. 424-214.000.
Veluswamy, Lavanga R.: *See—*
Maa, Peter S.; and Veluswamy, Lavanga R., 4,322,283, Cl. 208-8.00R.
Vendacopy, Inc.: *See—*
Oldenkamp, Ralph J., 4,322,613, Cl. 235-449.000.
Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH: *See—*
Storandt, Ralf, 4,322,091, Cl. 280-615.000.
Vereinigte Baubeschlagfabriken Gretsch & Co., Ltd.: *See—*
Feucht, Rudi; Schmidt, Manfred; and Biermann, Peter, 4,322,092, Cl. 280-615.000.
Victor Company of Japan, Ltd.: *See—*
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Kosaka, Yositeru, 4,322,755, Cl. 360-10.000.
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Tatsuguchi, Kazuo, 4,322,748, Cl. 358-128.500.
Vieira, David D.; Dinard, Jacques; and Stossel, Alain, to Commissariat a l'Energie Atomique. Control apparatus for eddy current non-destructive testing using a digital compensating circuit. 4,322,683, Cl. 324-225.000.
Villeneuve, Norman R. Metallurgical mount preparation method. 4,322,382, Cl. 264-279.000.
Vinegar, Ralph; and Wolberg, Gerald, to Burroughs Wellcome Co. Anti-inflammatory nucleosides. 4,322,411, Cl. 424-180.000.
Virk, Kashmir S.; and Alperstein, Martin, to Texaco Inc. Catalytic exhaust gas torch. 4,322,387, Cl. 422-174.000.
Vitapharm Pharmaceutical Pty. Ltd.: *See—*
Ko, Sai Y., 4,322,407, Cl. 424-128.000.
Voegtlin, Rene; and Bongard, Philippe. Hot air recirculation baking oven. 4,322,204, Cl. 432-152.000.
Vogelaar, Bernard F.: *See—*
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Vollman, Charles K., to Co-Poly-Ex Corporation. Bag holding and supporting apparatus. 4,322,048, Cl. 248-97.000.
Vonder, David L.; and Petkewicz, Frank J., to GTE Automatic Electric Labs Inc. Adjustable flux generator a magnetically activated electronic switch. 4,322,709, Cl. 338-32.00H.
Voorman, Johannes O., to U.S. Philips Corporation. Clamping circuit for an adaptive filter. 4,322,811, Cl. 364-825.000.
Voran, Willis R.: *See—*
Martin, Harlan W.; Burkholder, Harvey Z.; Voran, Willis R.; and Winters, Galen A., 4,321,887, Cl. 119-22.000.
Voss, Gunther; and Gruber, Peter, to Boehringer Ingelheim GmbH. Pharmaceuticals having dotted active ingredients and a method and apparatus for the preparation thereof. 4,322,449, Cl. 427-3.000.
Vrieland, Gail E.; Bremmer, Bart J.; and Crooks, Richard E., to Dow Chemical Company, The. Preparation of symmetrical tetrachloropyridine. 4,322,538, Cl. 546-345.000.
Vuilleumier, Cyril, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Monodirectional torque-transmission gear. 4,321,839, Cl. 74-462.000.
Vulcan Australia Limited: *See—*
Trihey, John M., 4,321,909, Cl. 126-425.000.
Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi: *See—*
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W. C. Bradley Co.: *See—*
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W. L. Gore & Associates, Inc.: *See—*
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W. R. Grace & Co.: *See—*
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Wachter, Michael P.: *See—*
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Wacker-Chemie GmbH: *See—*
Deubzer, Bernward; Burkhardt, Jurgen; Brunner, Erich; and Sallersbeck, Konrad, 4,322,517, Cl. 528-14.000.
Merz, Ekkehard; and Kothe, Gerhard, 4,322,330, Cl. 523-221.000.
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Wada, Moriyasu; Suzuki, Shuichi; Ito, Takeo; and Hayase, Shuzi, to Tokyo Shibaura Denki Kabushiki Kaisha. Epoxy resin-based compositions. 4,322,513, Cl. 525-507.000.
Wadsworth, Francis T.: *See—*
Dotson, Anderson O., Jr.; and Wadsworth, Francis T., 4,322,565, Cl. 568-697.000.
Wagener, Dietrich; Flockenhaus, Claus; and Blase, Manfred, to Didier Engineering GmbH. Method for the wet quenching of coke. 4,322,269, Cl. 201-39.000.
Wagener, Kenneth B.: *See—*
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Wagner, Gerhard: *See—*
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Wagner, Kuno, to Bayer Aktiengesellschaft. Methylolated mono- and oligosaccharides. 4,322,523, Cl. 536-4.000.
Wagner, Reinhard; Werner, Gerhard; Hencken, Gunther; and Just, Christoph, to Hoechst Aktiengesellschaft. Resin binders and process for preparing them. 4,322,504, Cl. 525-7.100.
Wagner, William E., to PPG Industries, Inc. Method for making dibutyltin difluoride. 4,322,363, Cl. 260-429.700.
Wagner, William S.: *See—*
Kraft, Derald H.; and Wagner, William S., 4,321,819, Cl. 72-456.000.
Wahl, Karl-Heinz: *See—*
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Wahlers, Richard L.; and Merz, Kenneth M., to TRW, Inc. Electrical resistor material, resistor made therefrom and method of making the same. 4,322,477, Cl. 428-432.000.
Waineo, Glenn B.: *See—*
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Walford, Robert B.: *See—*
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Cundall, Robert L.; and Walker, Derek, 4,322,347, Cl. 260-239.100.
Walker, Donald F., to Ferranti Limited. Electric motor control apparatus. 4,322,672, Cl. 318-800.000.
Walker, John D., to General Electric Company Limited, The. Transistor switching circuit. 4,322,785, Cl. 363-21.000.
Wallace, Richard B., to Oakland Corporation, The. Ring patch for nuts. 4,321,885, Cl. 118-102.000.
Wallace, Robert D.: *See—*
Riches, Arthur J.; and Wallace, Robert D., 4,322,121, Cl. 339-89.00M.
Walter, James M.: *See—*
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Walter, Karl-Heinz: *See—*
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Warner Electric Brake & Clutch Company: *See*—
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Warnick, Robert F.: *See*—
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Warren, Stanley W., to International Standard Electric Corporation. Infra-red filter. 4,322,125, Cl. 350-1.600.
Warshawsky, Jerome, to I. W. Industries, Inc. Swivel joint. 4,322,098, Cl. 285-264.000.
Wasson, John H.: *See*—
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Bouzard, Daniel; Perol, Claude; Stemer, Jacques; Weber, Abraham; and Granatek, Edmund S., 4,322,424, Cl. 424-257.000.
Weber, Harold J., to Coulter Systems Corp. Pulse burst regulated d.c. power supply apparatus and method. 4,322,786, Cl. 363-21.000.
Weber, Karl-Heinz: *See*—
Schneider, Claus; Weber, Karl-Heinz; Langbein, Adolf; Bechtel, Wolf D.; and Boke, Karin, 4,322,423, Cl. 424-256.000.
Weber, Ronald G., to Lowrance Electronics, Inc. Range expander for sonar system. 4,322,827, Cl. 367-99.000.
Webster, R. Daniel, to Baxter Travenol Laboratories, Inc. Clear, autoclavable, sealed container having good water vapor barrier properties and flex crack resistance. 4,322,465, Cl. 428-194.000.
Weeks, Robert E.: *See*—
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Weinhardt, Klaus; and Marx, Michael, to Syntex (U.S.A.) Inc. 4-Phenyl-and 5-phenyl-1,4,5,6-tetrahydro-pyrimidine derivatives. 4,322,421, Cl. 424-251.000.
Weisner, Horst: *See*—
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Weiss, Alvin H. Glycolaldehyde or ethylene glycol from formaldehyde. 4,322,568, Cl. 568-862.000.
Weiss, Hermann, to U.S. Philips Corporation. Coding and decoding artifact-free images of objects. 4,322,808, Cl. 364-515.000.
Weiss, Otto, to Zeiss-Stiftung, Carl. Backlash-free cam control. 4,322,151, Cl. 354-196.000.
Weiss, Robert A.: *See*—
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Wenzel, Bela: *See*—
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Emerson, John A.; and Townsend, Wesley P., 4,322,451, Cl. 427-53.100.
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Jackson, Leigh F.; and Martin, Niles J., 4,322,703, Cl. 335-205.000.
Johnson, James C., 4,322,660, Cl. 315-289.000.
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Weston, Martin, to British Broadcasting Corporation. Signal generator for television testing. 4,322,749, Cl. 358-139.000.
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Grinage, Claude M., 4,321,746, Cl. 29-568.000.
White, Gerald A. Exercise weight unit for attachment to the foot. 4,322,072, Cl. 272-119.000.
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White, William A., Jr.: *See*—
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Whitehead, Merill, to Twin View Glass, Inc. Glass panes and buildings including glass panes. 4,321,778, Cl. 52-397.000.
Wichterle, Otto, to SPOFA, spojene podniky pro zdravotnickou vyrobu. Hydrophilic-gel contact lenses adapted into a planarized xerogel state and method for making the same. 4,322,139, Cl. 351-160.00H.
Wick, Manfred: *See*—
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Wiest, Hubert; Weissgerber, Rudolf; and Lieb, Erwin, to Wacker-Chemie GmbH. Copolymers for pressure-sensitive adhesives based on acrylic esters, (meth)acrylamide vinyl acetate and ethylene. 4,322,516, Cl. 526-307.700.
Wildenradt, Carl H. Lock mechanism of the single cylinder deadbolt type. 4,321,810, Cl. 70-129.000.
Wilhelm, Gary, to Llama Gabilonda y. Cia. S.A. Hammer actuator. 4,321,764, Cl. 42-69.00B.
Willett, Michael C.: *See*—
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Williams, Albert G., to Celanese Corporation. Process for producing halogenated aromatic polyesters. 4,322,521, Cl. 528-182.000.
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Williams, Donna. Crepe maker. 4,321,858, Cl. 99-353.000.
Williams, James E., to Wilson Research & Development, Inc. Method for protecting the feed tube of a food processor. 4,321,741, Cl. 29-434.000.
Williams, Paul B.: *See*—
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Williamson, Richard A.; and Gitelson, Derek, to Multisonics, Inc. Method for controlling traffic flow. 4,322,801, Cl. 364-436.000.
Willsey, Charles H. Egg breaking and contents separating machine. 4,321,864, Cl. 99-500.000.
Wilson, David A.; and Griffin, Freddie, Jr., to Dow Chemical Company, The. Method of preparing a manganese chelate having improved properties. 4,322,361, Cl. 260-429.0QJ.
Wilson, Everett E. Garden cultivator with reversing operation activated by vertical engine movement and with freely rotatable cultivator cylinder. 4,321,969, Cl. 172-42.000.
Wilson, George S.: *See*—
Tuller, Harold W.; Schulze, Stephen R.; and Wilson, George S., 4,322,480, Cl. 428-476.100.
Wilson, Gregory B.; and Fudenberg, H. Hugh. Method of diagnosing cystic fibrosis patients and asymptomatic carrier of the cystic fibrosis gene. 4,322,274, Cl. 204-180.00G.
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Winters, Galen A.: *See*—
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Wolfinger, John F., to General Electric Company. Calibration source for instruments to measure power and negative sequence current of dynamoelectric machines. 4,322,790, Cl. 363-148.000.
Wong, John L., to Research Corporation. Polycyclic chlorinated hydrocarbons containing bridgehead or imino nitrogen. 4,322,528, Cl. 544-338.000.
Wong, Kwan. Flashlight. 4,322,782, Cl. 362-183.000.
Wood, Harold S., to Maloney-Crawford Corporation. Atmospheric glycol reclaimer with vapor recycle. 4,322,265, Cl. 159-47.00R.
Wood, Randolph C. Clay mixing apparatus. 4,322,169, Cl. 366-77.000.
Wood, William D.; and Lamusga, Gary R., to Toro Company, The. Height of cut adjustment. 4,321,784, Cl. 56-17.200.
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Wright, Allen T.: *See*—
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Wright, Benjamin K., to Minnesota Mining and Manufacturing Company. System and method for locating resistive faults and interconnect errors in multi-conductor cables. 4,322,677, Cl. 324-52.000.
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Wright, David B.; Moore, Sanders H.; and Kircher, Morton S., to Olin Corporation. Method for controlling foaming within gas-liquid separation area. 4,322,281, Cl. 204-237.000.
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Wurmli, Albert; and Berendt, Hans U., to Ciba Geigy Corporation. Condensation products containing sulphonic acid groups. 4,322,372, Cl. 260-512.00R.
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Yabuuchi, Yoichi; Yoshizaki, Shiro; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Compositions for treating glaucoma. 4,322,425, Cl. 424-258.000.
Yaeger, Ronald J.; and Keller, Gerald W., to Air & Refrigeration Corp. Quick connector and shut-off valve assembly for heat recovery system. 4,321,797, Cl. 62-79.000.
Yamada, Hiromichi: *See*—
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Yamada, Tateo; Harigaya, Isao; Ogawa, Yukio; and Hirohata, Michio, to Canon Kabushiki Kaisha. Shutter device for camera. 4,322,145, Cl. 354-50.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
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Yamamoto, Kazuhiro: *See*—
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Yamamoto, Masahiro, to Yamaha Hatsudoki Kabushiki Kaisha. Two-stroke engine having variable exhaust port timing. 4,321,893, Cl. 123-65.0PE.
Yamanaka, Minoru; Haneda, Hideo; Katoh, Masatoshi; and Suzuki, Mitsuyuki, to Aisin Seiki Kabushiki Kaisha. Electromagnetically operated valve unit. 4,322,057, Cl. 251-129.000.
Yamanouchi, Hideki: *See*—
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Yamasa Tokei Meter Co., Ltd.: *See*—
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Yarwood, John C.; Ungarean, Gary L.; Tyler, Derek E.; and Gaule, Gerhart K., to Olin Corporation. Electromagnetic casting shape control by differential screening and inductor contouring. 4,321,959, Cl. 164-467.000.
Yaskawa Electric Mfg. Co. Ltd.: *See*—
Fukuma, Nobuo; Kato, Yoshito; and Terui, Takao, 4,322,669, Cl. 318-571.000.
Yasuda, Eturo; Sato, Susumu; Segawa, Yoshihiro; Hattori, Tadashi; and Aoki, Keiji, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Gas component detection apparatus. 4,322,383, Cl. 422-95.000.
Yokoyama, Henry; Hayman, Ernest P.; Hsu, Wan-Jean; and Poling, Stephen M., to United States of America, Agriculture. Method of increasing the yield of hydrocarbons from plants. 4,322,242, Cl. 71-121.000.
Yoshida, Hiroshi, to Yoshida Kogyo K.K. Slide fastener stringer. 4,321,733, Cl. 24-205.16C.
Yoshida Kogyo K.K.: *See*—
Yoshida, Hiroshi, 4,321,733, Cl. 24-205.16C.
Yoshida, Masayuki, to Mitsubishi Denki Kabushiki Kaisha. Elevator speed detecting apparatus. 4,322,712, Cl. 340-19.00R.
Yoshida, Okio: *See*—
Takemura, Yasuo; and Yoshida, Okio, 4,321,747, Cl. 29-572.000.
Yoshida, Susumu; Ishigaki, Yoshio; and Shinkai, Kinya, to Sony Corporation. Method and apparatus for improving the sharpness of a video picture. 4,322,742, Cl. 358-65.000.
Yoshida, Tadao, to Sony Corporation. Inverter circuit. 4,322,788, Cl. 363-49.000.
Yoshikawa, Ryoichi, to Canon Kabushiki Kaisha. Information indicating device for single lens reflex camera with built-in flash unit. 4,322,148, Cl. 354-128.000.
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pharmaceutical composition containing a derivative of para-aminobenzoic acid as an active ingredient. 4,322,408, Cl. 424-180.000.
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pharmaceutical composition containing a derivative of orthoaminobenzoic acid as an active ingredient. 4,322,409, Cl. 424-180.000.
Yoshimura, Naoki; Hijikata, Kenji; and Hosokawa, Noritaka, to Mitsubishi Petrochemical Co., Ltd. Slow-curing water-curable urethane prepolymer composition. 4,322,327, Cl. 524-507.000.
Yoshino, Masato. Deceleration-sensitive, load-responsive brake pressure control device. 4,322,115, Cl. 303-6.00C.
Yoshioka, Masamichi: *See*—
Kudo, Bosshi; Matsuo, Kazuyoshi; Maki, Takeshi; and Yoshioka, Masamichi, 4,322,263, Cl. 156-617.00H.
Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Suenobu, Koreyoshi; Kohara, Masanori; Katsuyama, Kazuki; and Kinishi, Ryoichi, 4,322,519, Cl. 528-45.000.
Yoshizaki, Shiro: *See*—
Yabuuchi, Yoichi; Yoshizaki, Shiro; and Nakagawa, Kazuyuki, 4,322,425, Cl. 424-258.000.
Young Engineering, Inc.: *See*—
Young, William O., Jr., 4,322,026, Cl. 226-15.000.
Young, James C.: *See*—
Scholten, John J.; and Young, James C., 4,322,299, Cl. 210-794.000.
Young, Leroy D., Jr. Stringed instrument synthesizer apparatus. 4,321,852, Cl. 84-1.160.
Young, William O., Jr., to Young Engineering, Inc. Method and apparatus for controlling a moving web. 4,322,026, Cl. 226-15.000.
Yuhas, Edward R., to Dragoco Inc. Cosmetic stick composition. 4,322,400, Cl. 424-59.000.
Zabler, Erich; and Wolf, Konrad, to Robert Bosch GmbH. Inductive transducer responsive to displacement along a path. 4,322,727, Cl. 340-870.350.
Zackay, Victor F.: *See*—
Henry, Richard J.; Zackay, Victor F.; and Bhat, Manjeshwar S., 4,322,246, Cl. 75-124.000.
Zaltzman, Arthur; Mizrach, Amos; and Schmilovitz, Zeev, to State of Israel, Ministry of Agriculture, The. Fluidized bed separator. 4,322,287, Cl. 209-44.000.

Zalucha, Denis J., to Lord Corporation. Fast curing phosphate modified anaerobic adhesive compositions. 4,322,509, Cl. 525-287.000.

Zasloff, Barbara S. Controlling ink diffusion in watercolor copying. 4,321,870, Cl. 101-473.000.

Zavada, Michael J.; Crisis, John O. E.; and Turgeon, Milton R., to United States of America, Army. Pallet tie-down assembly. 4,322,192, Cl. 410-81.000.

Zeiringer, Rudolf, to List, Hans. Transducer device for measuring the internal pressure in a pipe. 4,321,833, Cl. 73-730.000.

Zeiss-Stiftung, Carl: *See*—
Weiss, Otto, 4,322,151, Cl. 354-196.000.

Zenith Radio Corporation: *See*—
Bart, Stan; and Tzakis, George J., 4,322,664, Cl. 315-408.000.

Zenzefilis, George E. Method and apparatus for recording and reproducing video. 4,322,759, Cl. 360-33.000.

Ziegel, Douglas H., to RCA Corporation. Levelable lapping machine. 4,321,772, Cl. 51-109.00R.

Ziegler, Kurt, to Ziegler, Ursula E.; Merritt, Ingrid; Burg, Donald E.; and Van Der Wall, Robert J. Locking mechanism. 4,321,811, Cl. 70-356.000.

Ziegler, Ursula E.: *See*—
Ziegler, Kurt, 4,321,811, Cl. 70-356.000.

Ziets, George: *See*—
Ahmad, Nawaz; Kaplan, Leonard; and Ziets, George, 4,322,399, Cl. 424-44.000.

Zolyomi, Gabor: *See*—
Korosi, Jeno; Lang, Tibor; Szekely, Jozsef; Andrasi, Ferenc; Zolyomi, Gabor; Borsi, Jozsef; Goldschmidt nee Horvath, Katalin; Hamori, Tamas; Szabo nee Czibula, Gabriella; Meszaros nee Dunai-Kovacs, Zsuzsanna; and Miglecz, Erzsebet, 4,322,346, Cl. 260-239.0BD.

Zuber, Bretislav P., to Northern Telecom Limited. Coil handling device. 4,322,198, Cl. 414-754.000.

Zuilichem, Dirk J. V.; Veenendaal, Jan; and Newton, David. Method for de-hulling cacao beans. 4,322,444, Cl. 426-241.000.

Zulauf Inc.: *See*—
Reynolds, James M., 4,322,206, Cl. 433-9.000.

Zweegers, Petrus W. Drop crushing device. 4,321,782, Cl. 56-1.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF MARCH, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bailey, Terry R.: *See*—
Bingham, Wallace K.; and Bailey, Terry R., Re. 30,892, Cl. 428-241.000.

Baratto, Eugene L., to Minnesota Mining and Manufacturing Company. Resilient wood replication. Re. 30,891, Cl. 428-142.000.

Bingham, Wallace K.; and Bailey, Terry R., to Minnesota Mining and Manufacturing Company. Area-retroreflectorization of fabrics. Re. 30,892, Cl. 428-241.000.

Hodge, Allan M. Trash container lid system. Re. 30,890, Cl. 220-331.000.

McNulty, Frank E. Outer wrap for pipelines. Re. 30,889, Cl. 138-144.000.

Minnesota Mining and Manufacturing Company: *See*—
Baratto, Eugene L., Re. 30,891, Cl. 428-142.000.
Bingham, Wallace K.; and Bailey, Terry R., Re. 30,892, Cl. 428-241.000.

LIST OF DESIGN PATENTEES

A. Ahlstrom Osakeyhtio: *See*—
Vennola, Jorma H., 263,544, Cl. D7-3.000.

Ader, Gary B., to Berkley and Company, Inc. Wearable tackle box. 263,519, 3-30-82, Cl. D2-406.000.

Adkinson, Joseph E. Cocktail table or similar article. 263,536, 3-30-82, Cl. D6-175.000.

AGFA-Gevaert AG: *See*—
Schlagheck, Norbert, 263,599, Cl. D16-4.000.

Allegretti & Company: *See*—
Carsello, Anthony, 263,547, Cl. D32-18.000.

American Payment Centers, Inc.: *See*—
Donlin, Gerald M., 263,638, Cl. D99-28.000.

Avon Products, Inc.: *See*—
Smith, Douglas B.; and Torell, Arthur R., 263,564, Cl. D9-385.000.

Baisch, Herbert: *See*—
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 263,532, Cl. D6-178.000.
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 263,533, Cl. D6-178.000.

Ballereaud, Pierre. Make-up box. 263,634, 3-30-82, Cl. D28-83.000.

Barbera, Lawrence E.; Connin, John L.; Lawing, Michael E.; and Richardson, Dean W., to Exxon Research & Engineering Co. Facsimile transceiver or similar article. 263,591, 3-30-82, Cl. D14-94.000.

Barbera, Lawrence E.; Connin, John L.; Lawing, Michael E.; and Richardson, Dean W., to Exxon Research & Engineering Co. Facsimile transceiver or similar article. 263,592, 3-30-82, Cl. D14-94.000.

Barberry, Susan J.: *See*—
Barberry, Theodore O., Jr.; and Barberry, Susan J., 263,632, Cl. D27-25.000.

Barberry, Theodore O., Jr.; and Barberry, Susan J. Pipe rack. 263,632, 3-30-82, Cl. D27-25.000.

Barrett, Bernard R. Toy airplane. 263,609, 3-30-82, Cl. D21-89.000.

Bassani, John C. Animal safety harness for automobiles or the like. 263,636, 3-30-82, Cl. D30-38.000.

Beck, James W.: *See*—
Beck, William B.; and Beck, James W., 263,553, Cl. D8-78.000.

Beck, William B.; and Beck, James W. Hammer head cushion. 263,553, 3-30-82, Cl. D8-78.000.

Beier, Hanns W. Snap frame. 263,571, 3-30-82, Cl. D11-80.000.

Bennett, Eli J. Garden implement blade. 263,549, 3-30-82, Cl. D8-12.000.

Benoit, Raymond A., to Societe les Piles Wonder. Arm light for bicyclists and pedestrians. 263,569, 3-30-82, Cl. D10-114.000.

Bergman, Andrew I., to Quaker Oats Company, The. Toy message center. 263,611, 3-30-82, Cl. D21-111.000.

Berkley and Company, Inc.: *See*—
Ader, Gary B., 263,519, Cl. D2-406.000.

Beuchat, Georges. Swim fin. 263,615, 3-30-82, Cl. D21-239.000.

Bjon, Matts V. Die for game or similar article. 263,607, 3-30-82, Cl. D21-41.000.

Boots Company Limited, The: *See*—
Briggs, Charles J.; and Lindsell, Hubert, 263,538, Cl. D6-191.000.

Booty, Donald J., to Snow Biz, Inc. Ski boot walking accessory. 263,516, 3-30-82, Cl. D2-314.000.

Borichevsky, Donald J., to Telescope Folding Furniture Co., Inc., The. Chair. 263,526, 3-30-82, Cl. D6-73.000.

Boudreaux, Mark D.; and Farrah, Jack R., to CPG Products Corp. Toy telephone. 263,610, 3-30-82, Cl. D21-111.000.

Bowen, Susan L.: *See*—
Sandground, Marcia; and Bowen, Susan L., 263,545, Cl. D7-57.000.

Boyajian, Alfred Z. Combined wire and bolt pliers. 263,552, 3-30-82, Cl. D8-52.000.

Bridges, Kenneth J.: *See*—
McKnight, Keith; and Bridges, Kenneth J., 263,625, Cl. D24-64.000.

Briggs, Charles J.; and Lindsell, Hubert, to Display PJF Ltd.; and Boots Company Limited, The. Merchandise dispenser. 263,538, 3-30-82, Cl. D6-191.000.

Burlington Furniture Div. of Burl. Ind., Inc.: *See*—
West, Haywood L., 263,527, Cl. D6-79.000.

Canon Kabushiki Kaisha: *See*—
Furukawa, Yoshiki, 263,600, Cl. D16-31.000.
Yoshioka, Eiichi; and Motoyoshi, Junichi, 263,602, Cl. D18-7.000.

Canty, Dulor P. Fishing float. 263,616, 3-30-82, Cl. D21-238.000.

Carsello, Anthony, to Allegretti & Company. Portable electric air blower and vacuum. 263,547, 3-30-82, Cl. D32-18.000.

Castagna, John F.; and Emmerling, Ronald A., to Sparkomatic Corporation. Control unit for a combined automobile cassette player and radio. 263,584, 3-30-82, Cl. D14-10.000.

Ching Wah Metal Ware Factory Limited: *See*—
Wong, Siu W., 263,561, Cl. D9-347.000.

Cincala, Stephen P., to Owens-Illinois, Inc. Bottle. 263,562, 3-30-82, Cl. D9-349.000.

Coats & Clark, Inc.: *See*—
Einhorn, Ruediger, 263,557, Cl. D8-385.000.

Cohen, Jacques. Sole for footwear. 263,518, 3-30-82, Cl. D2-322.000.

Colby, Donald B., to Scott Paper Company. Folding chair. 263,525, 3-30-82, Cl. D6-70.000.

Collins, David; and Hammond, James. Toilet light for attachment to toilet seat. 263,629, 3-30-82, Cl. D26-24.000.

Conn, Denson D., Sr., to D.M. Systems, Inc. Massager. 263,623, 3-30-82, Cl. D24-36.000.

Connin, John L.: *See*—
Barbera, Lawrence E.; Connin, John L.; Lawing, Michael E.; and Richardson, Dean W., 263,591, Cl. D14-94.000.
Barbera, Lawrence E.; Connin, John L.; Lawing, Michael E.; and Richardson, Dean W., 263,592, Cl. D14-94.000.

Continental Group, Inc., The: *See*—
Hasegawa, Gary K., 263,567, Cl. D9-438.000.

CPG Products Corp.: *See*—
Boudreaux, Mark D.; and Farrah, Jack R., 263,610, Cl. D21-111.000.

Curtis, Gerald J. Prop lock. 263,555, 3-30-82, Cl. D8-331.000.

D.M. Systems, Inc.: *See*—
Conn, Denson D., Sr., 263,623, Cl. D24-36.000.

Dale, Kenneth L., to Sallade, Charles N. Can opener. 263,551, 3-30-82, Cl. D8-40.000.

Dallaire, Raymond. Window component extrusion. 263,626, 3-30-82, Cl. D25-74.000.

Dallaire, Raymond. Window component extrusion. 263,627, 3-30-82, Cl. D25-74.000.

Daugherty, Marie L. Bedspread. 263,543, 3-30-82, Cl. D6-258.000.

Deutschen Semperit Gesellschaft m.b.H.: *See*—
Rampl, Alfred, 263,579, Cl. D12-146.000.

Display PJF Ltd.: *See*—
Briggs, Charles J.; and Lindsell, Hubert, 263,538, Cl. D6-191.000.

Donlin, Gerald M., to American Payment Centers, Inc. Payment deposit cabinet. 263,638, 3-30-82, Cl. D99-28.000.

Doodson, Peter J., to U.S. Philips Corporation. Video compact cassette. 263,585, 3-30-82, Cl. D14-11.000.

Dover Corporation: *See*—
Taylor, Charles W., 263,618, Cl. D23-37.000.

Duracell International Inc.: *See*—
Kaye, Gordon E., 263,581, Cl. D13-2.000.

Duskin Franchise Kabushiki Kaisha (Duskin Franchise Co., Ltd.): *See*—
Yamazaki, Ken; Yamamoto, Yosuke; Kinoyama, Takehisa; and Sasagawa, Kinichi, 263,541, Cl. D6-219.000.

Efuti Giken Co., Ltd.: *See—*
Kawai, Tsutomu, 263,583, Cl. D14-2.000.
Einhorn, Ruediger, to Coats & Clark, Inc. Wall anchor. 263,557, 3-30-82, Cl. D8-385.000.
Ellington, Scott K. Orthopedic repair and mobility device. 263,517, 3-30-82, Cl. D2-314.000.
Emmerling, Ronald A.: *See—*
Castagna, John F.; and Emmerling, Ronald A., 263,584, Cl. D14-10.000.
Ernest, Robert O.; Guth, Gordon T.; and Long, Douglas G., to Sunbeam Corporation. Electric shaver. 263,633, 3-30-82, Cl. D28-49.000.
Exxon Research & Engineering Co.: *See—*
Barbera, Lawrence E.; Connin, John L.; Lawing, Michael E.; and Richardson, Dean W., 263,591, Cl. D14-94.000.
Barbera, Lawrence E.; Connin, John L.; Lawing, Michael E.; and Richardson, Dean W., 263,592, Cl. D14-94.000.
Farrah, Jack R.: *See—*
Boudreaux, Mark D.; and Farrah, Jack R., 263,610, Cl. D21-111.000.
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, to Hirsh Company. Foldaway work center. 263,532, 3-30-82, Cl. D6-178.000.
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, to Hirsh Company. Foldaway workshop. 263,533, 3-30-82, Cl. D6-178.000.
Flanagan, Michael L. Vehicle seat arm rest. 263,540, 3-30-82, Cl. D6-200.000.
Fobes, Ronald L. Camouflage fabric for apparel. 263,637, 3-30-82, Cl. D92-1.00R.
Fukushima, Hisao; and Hirooka, Junji, to Oki Electric Industry Co., Ltd. Remote telephone dialing touch-pad. 263,590, 3-30-82, Cl. D14-66.000.
Funai Electric Trading Co., Inc.: *See—*
Kawai, Tsutomu, 263,583, Cl. D14-2.000.
Furukawa, Yoshiki, to Canon Kabushiki Kaisha. Electrophotographic apparatus. 263,600, 3-30-82, Cl. D16-31.000.
Gainsborough Hardware Industries Pty. Limited: *See—*
Wasbrough, Brian; and Munro, Harold F., 263,554, Cl. D8-301.000.
Gerber Products Company: *See—*
Polito, Peter T.; and Ross, Norman W., 263,566, Cl. D9-418.000.
GM Research, Incorporated: *See—*
Murez, James D., 263,586, Cl. D14-106.000.
Goldman, Jerome N.; and Goldman, Marvin A., to Penn-Plax Plastics, Inc. Aquarium pump housing. 263,593, 3-30-82, Cl. D15-8.000.
Goldman, Marvin A.: *See—*
Goldman, Jerome N.; and Goldman, Marvin A., 263,593, Cl. D15-8.000.
Gordan, Miroslav. Necklace with illuminable pendant. 263,570, 3-30-82, Cl. D11-7.000.
Gunnigle, Thomas E., to Pansy Ellen Products, Inc. Rotatable dispensing rack for food jars. 263,528, 3-30-82, Cl. D6-146.000.
Guth, Gordon T.: *See—*
Ernest, Robert O.; Guth, Gordon T.; and Long, Douglas G., 263,633, Cl. D28-49.000.
Hammond, James: *See—*
Collins, David; and Hammond, James, 263,629, Cl. D26-24.000.
Hanson, Suzanne M. Backless chair or similar article. 263,524, 3-30-82, Cl. D6-58.000.
Hanson, Suzanne M. Table. 263,531, 3-30-82, Cl. D6-177.000.
Hasegawa, Gary K., to Continental Group, Inc., The. Pull tab for a container end. 263,567, 3-30-82, Cl. D9-438.000.
Hasson, Kenneth. Pocket carrying case for medicines. 263,622, 3-30-82, Cl. D24-34.000.
Henry, Dean P., to Rembe, Cody C. Exercise device or similar article. 263,613, 3-30-82, Cl. D21-198.000.
Hill, Victor E. Handle for walking stick or the like. 263,521, 3-30-82, Cl. D3-15.000.
Hillmer, Robert E., to Northern Telecom Limited. Telephone base set. 263,588, 3-30-82, Cl. D14-60.000.
Hirooka, Junji: *See—*
Fukushima, Hisao; and Hirooka, Junji, 263,590, Cl. D14-66.000.
Hirsh Company: *See—*
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 263,532, Cl. D6-178.000.
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 263,533, Cl. D6-178.000.
Hoese, Fred O. Motorcycle radio housing. 263,577, 3-30-82, Cl. D12-114.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Morioka, Minoru, 263,576, Cl. D12-110.000.
Ingledew, Peter, to Pye (Electronic Products)Limited. Food warming trolley. 263,573, 3-30-82, Cl. D34-14.000.
Inoue Co., Ltd.: *See—*
Inoue, Kiyoshi, 263,546, Cl. D7-59.000.
Inoue, Kiyoshi, to Inoue Co., Ltd. Combined pitcher with an ice bottle. 263,546, 3-30-82, Cl. D7-59.000.
Ito, Nobuyoshi, to Suntory Kabushiki Kaisha (Suntory Limited). Bottle. 263,563, 3-30-82, Cl. D9-352.000.
Jacobs, Karl M. Backrest. 263,539, 3-30-82, Cl. D6-197.000.
Johansson, Leif A. T.; Pers, Nils G.; and Lundgren, Staffan, to Tipe Revent AB. Baking oven or similar article. 263,595, 3-30-82, Cl. D15-104.000.
Johnson, Edward, to Kero-Sun, Inc. Portable kerosine heater. 263,621, 3-30-82, Cl. D23-124.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
Shimodaira, Tadayoshi, 263,604, Cl. D18-22.000.
Kawai, Tsutomu, to Funai Electric Trading Co., Inc.; and Efuti Giken Co., Ltd. Video tape recorder. 263,583, 3-30-82, Cl. D14-2.000.
Kaye, Gordon E., to Duracell International Inc. Electric battery. 263,581, 3-30-82, Cl. D13-2.000.
Kero-Sun, Inc.: *See—*
Johnson, Edward, 263,621, Cl. D23-124.000.
Kinnerbrew, Joseph E., IV. Bench. 263,523, 3-30-82, Cl. D6-26.000.
Kinoyama, Takehisa: *See—*
Yamazaki, Ken; Yamamoto, Yosuke; Kinoyama, Takehisa; and Sasagawa, Kinichi, 263,541, Cl. D6-219.000.
Klein, Gene. Guitar. 263,601, 3-30-82, Cl. D17-18.000.
Kuchler, Fritz. Slicing machine. 263,594, 3-30-82, Cl. D15-97.000.
Lassiter, Will M. Cutter bit. 263,598, 3-30-82, Cl. D15-139.000.
Lawing, Michael E.: *See—*
Barbera, Lawrence E.; Connin, John L.; Lawing, Michael E.; and Richardson, Dean W., 263,591, Cl. D14-94.000.
Barbera, Lawrence E.; Connin, John L.; Lawing, Michael E.; and Richardson, Dean W., 263,592, Cl. D14-94.000.
Lenger, Sidney A., Jr., to Singer Company, The. Mirror frame or similar article. 263,542, 3-30-82, Cl. D6-241.000.
Leonard, Jacques. Bottle. 263,560, 3-30-82, Cl. D9-337.000.
Leroux, Frank W. Housing for hydroponic apparatus. 263,572, 3-30-82, Cl. D11-152.000.
Liljeqvist, Lars. Desk. 263,530, 3-30-82, Cl. D6-176.000.
Lincoln Stove: *See—*
Otero, Terry L.; and Maxwell, Donald J., 263,620, Cl. D23-97.000.
Lindsell, Hubert: *See—*
Briggs, Charles J.; and Lindsell, Hubert, 263,538, Cl. D6-191.000.
Loewenton, Edward. Rattle. 263,608, 3-30-82, Cl. D21-65.000.
Long, Douglas G.: *See—*
Ernest, Robert O.; Guth, Gordon T.; and Long, Douglas G., 263,633, Cl. D28-49.000.
Lundgren, Staffan: *See—*
Johansson, Leif A. T.; Pers, Nils G.; and Lundgren, Staffan, 263,595, Cl. D15-104.000.
Magyar, Mark W. Record album storage barrel. 263,529, 3-30-82, Cl. D6-153.000.
Mair, Francis M.: *See—*
Townsend, Charles E., Jr.; and Mair, Francis M., 263,515, Cl. D2-247.000.
Markham, Joseph P., to Safety First Corporation. Safety strap for use in a vehicle seat. 263,537, 3-30-82, Cl. D6-191.000.
Markus, Frederick E. Shelving unit. 263,534, 3-30-82, Cl. D6-186.000.
Maxwell, Donald J.: *See—*
Otero, Terry L.; and Maxwell, Donald J., 263,620, Cl. D23-97.000.
McGourty, Thomas K. Conversion calculator or similar article. 263,603, 3-30-82, Cl. D18-10.000.
McKnight and Bridges Pty. Limited: *See—*
McKnight, Keith; and Bridges, Kenneth J., 263,625, Cl. D24-64.000.
McKnight, Keith; and Bridges, Kenneth J., to McKnight and Bridges Pty. Limited. Inflatable neck support. 263,625, 3-30-82, Cl. D24-64.000.
Miller, John F. Four wheel trolley. 263,574, 3-30-82, Cl. D34-35.000.
Miller, John F. Safety trolley. 263,575, 3-30-82, Cl. D34-35.000.
Morioka, Minoru, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 263,576, 3-30-82, Cl. D12-110.000.
Morita, Mike Y. Combined door stop and latching device. 263,558, 3-30-82, Cl. D8-402.000.
Motoyoshi, Junichi: *See—*
Yoshioka, Eiichi; and Motoyoshi, Junichi, 263,602, Cl. D18-7.000.
Munro, Harold F.: *See—*
Wasbrough, Brian; and Munro, Harold F., 263,554, Cl. D8-301.000.
Murez, James D., to GM Research, Incorporated. Portable computer enclosure. 263,586, 3-30-82, Cl. D14-106.000.
Nagode, Larry R.: *See—*
Snyder, Paul D.; and Nagode, Larry R., 263,612, Cl. D21-122.000.
Nelson, Norman, to Nelson Tool and Machine Company, Inc. Miniature chandelier. 263,631, 3-30-82, Cl. D26-84.000.
Nelson Tool and Machine Company, Inc.: *See—*
Nelson, Norman, 263,631, Cl. D26-84.000.
Northern Telecom Limited: *See—*
Hillmer, Robert E., 263,588, Cl. D14-60.000.
Read, Clifford D., 263,589, Cl. D14-60.000.
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Cincala, Stephen P., 263,562, Cl. D9-349.000.
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Gunnigle, Thomas E., 263,528, Cl. D6-146.000.
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Sadler, Charlton. Strength meter. 263,568, 3-30-82, Cl. D10-83.000.
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Wallace, Robert S., 263,556, Cl. D8-331.000.
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ISSUED MARCH 30, 1982

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